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**A COMPILATION OF SPACECRAFT LOADS DATA
FROM
FOUR TITAN CENTAUR LAUNCH VEHICLE FLIGHTS
VOLUME V: TIME HISTORY PLOTS**

Compiled by George Kachadourian

(NASA-CR-144948-Pt-2) A COMPILATION OF
SPACECRAFT LOADS DATA FROM FOUR TITAN
CENTAUR LAUNCH VEHICLE FLIGHTS. VOLUME 5,
PART 2: TIME HISTORY PLOTS (General
Electric Co.) 70 p HC A04/MF A01 CSCI 22B G3/15
N77-28194
Unclas
42488

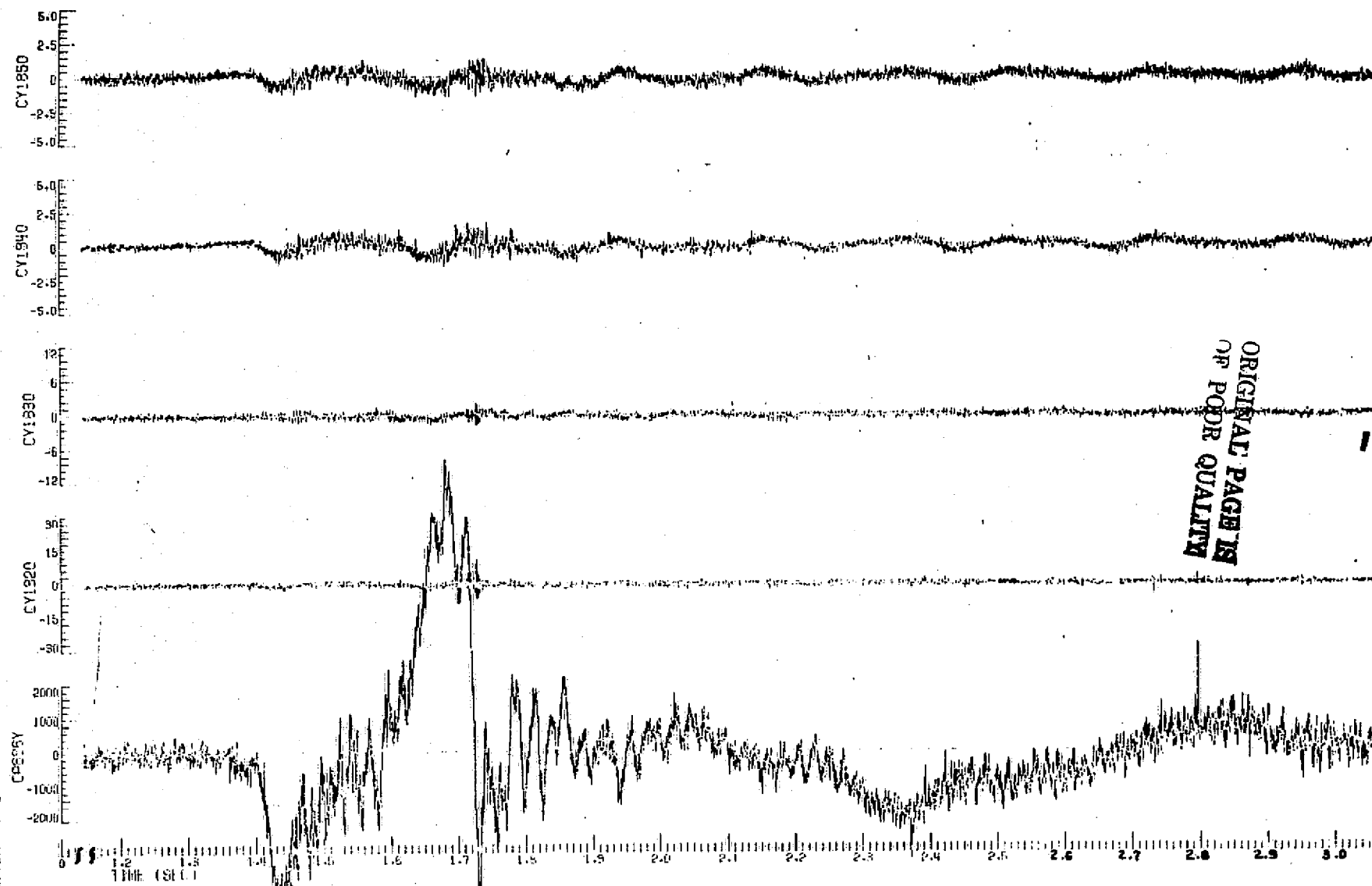
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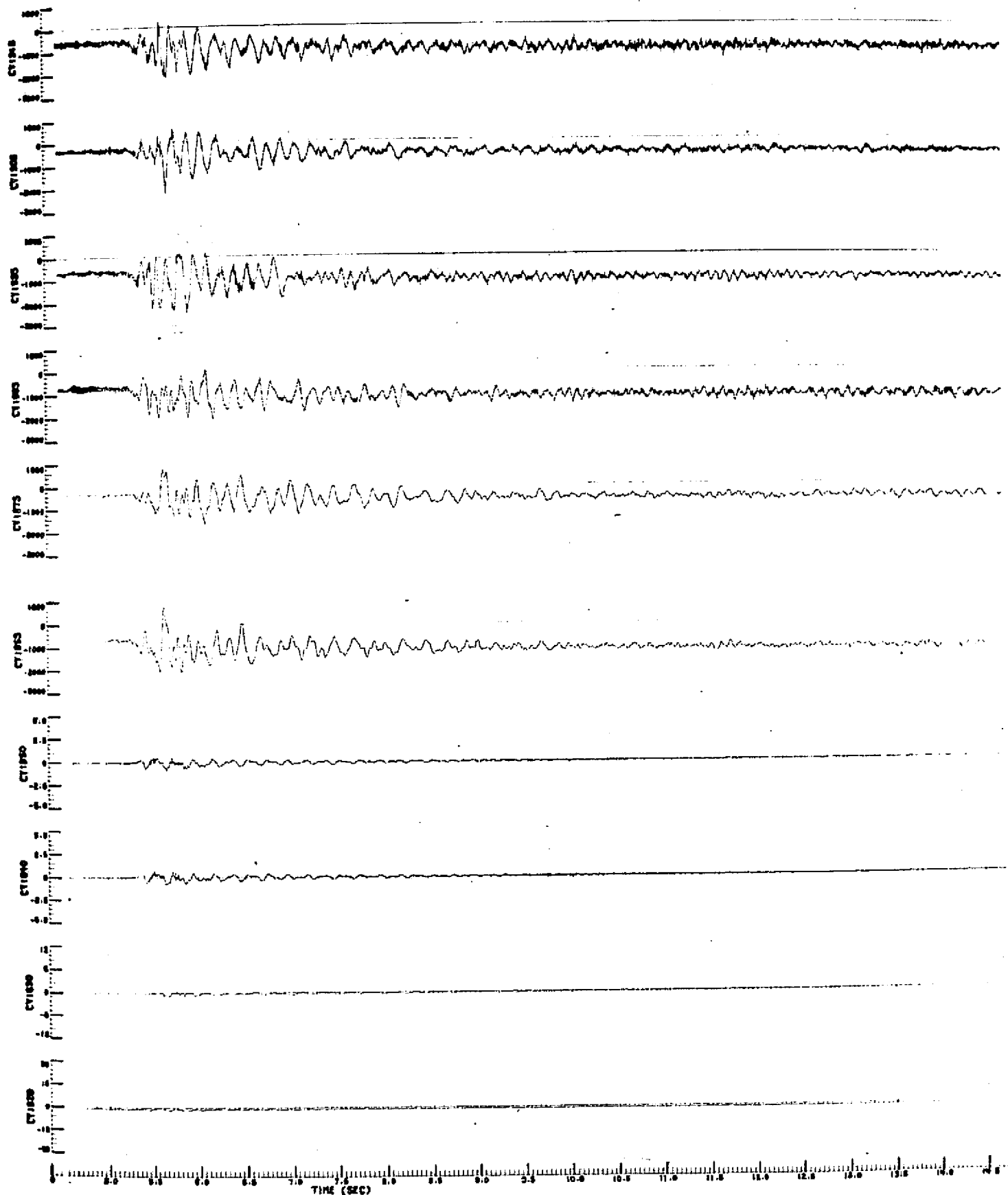
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

January 1977



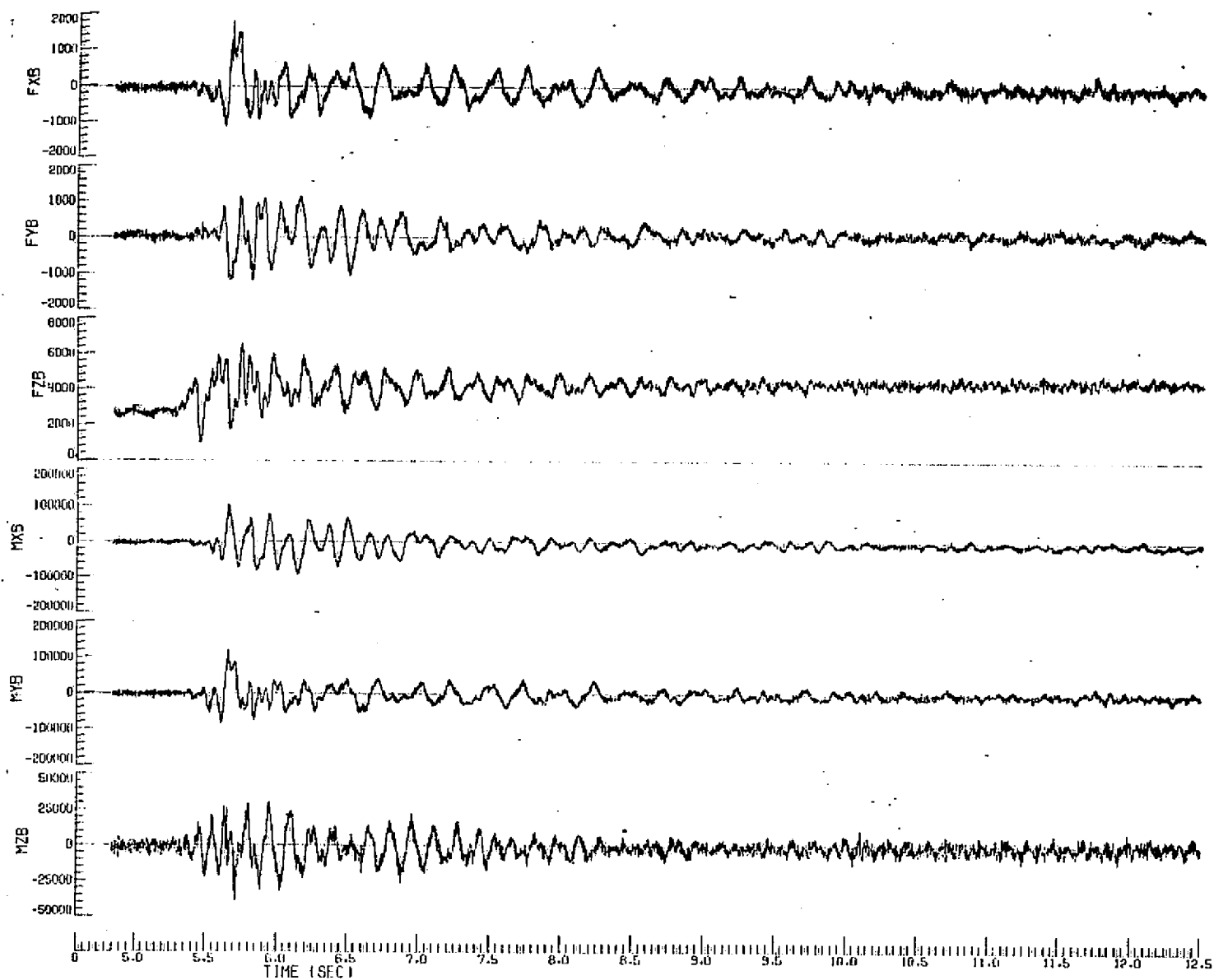
O = 21:21:59 = 76919 sec.

FIGURE 29. TC-4, Lift Off, Vib & Mic - 4096 sps



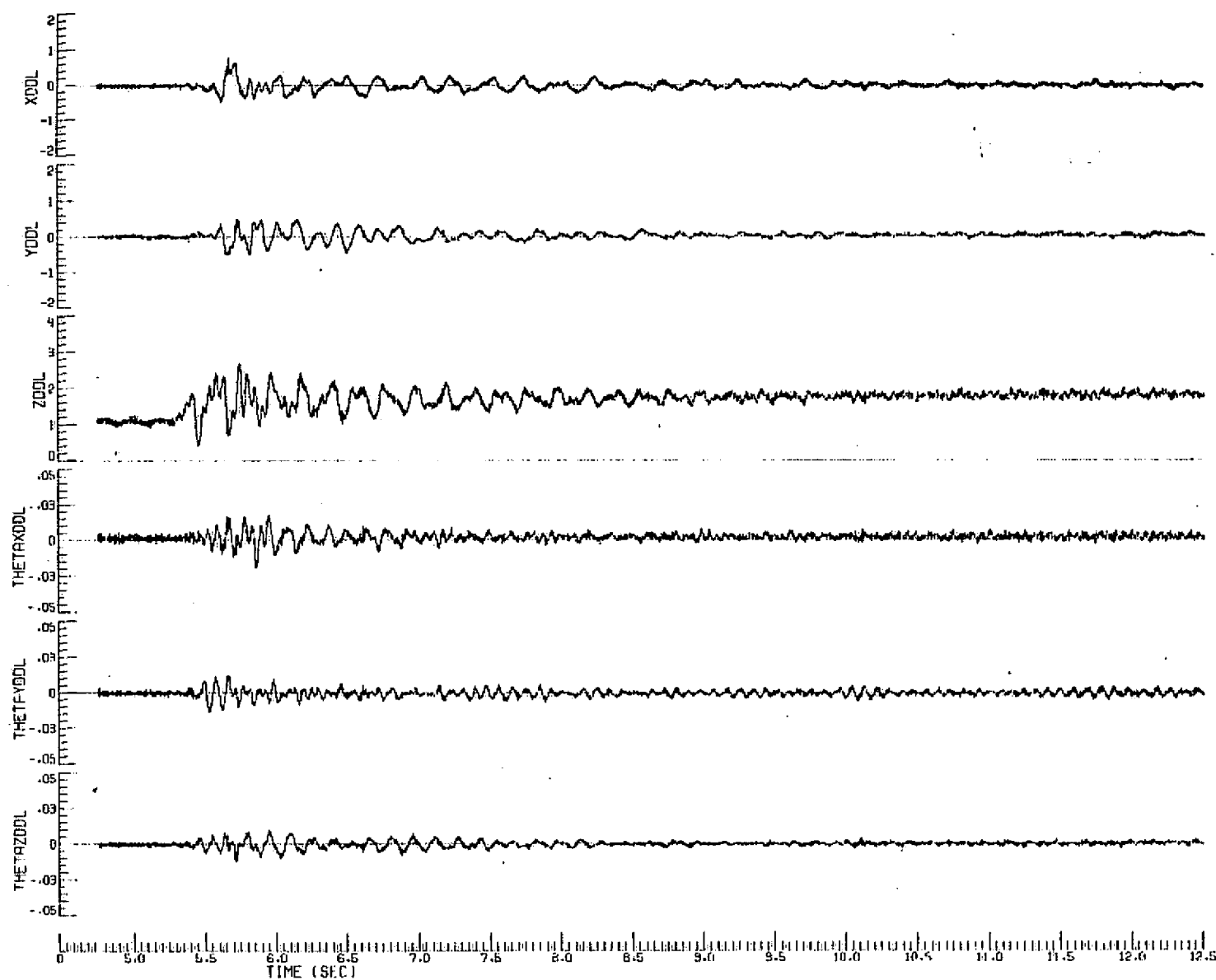
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FIGURE 30. TC-4, Lift-Off - Strain & Vib - 1024 sps



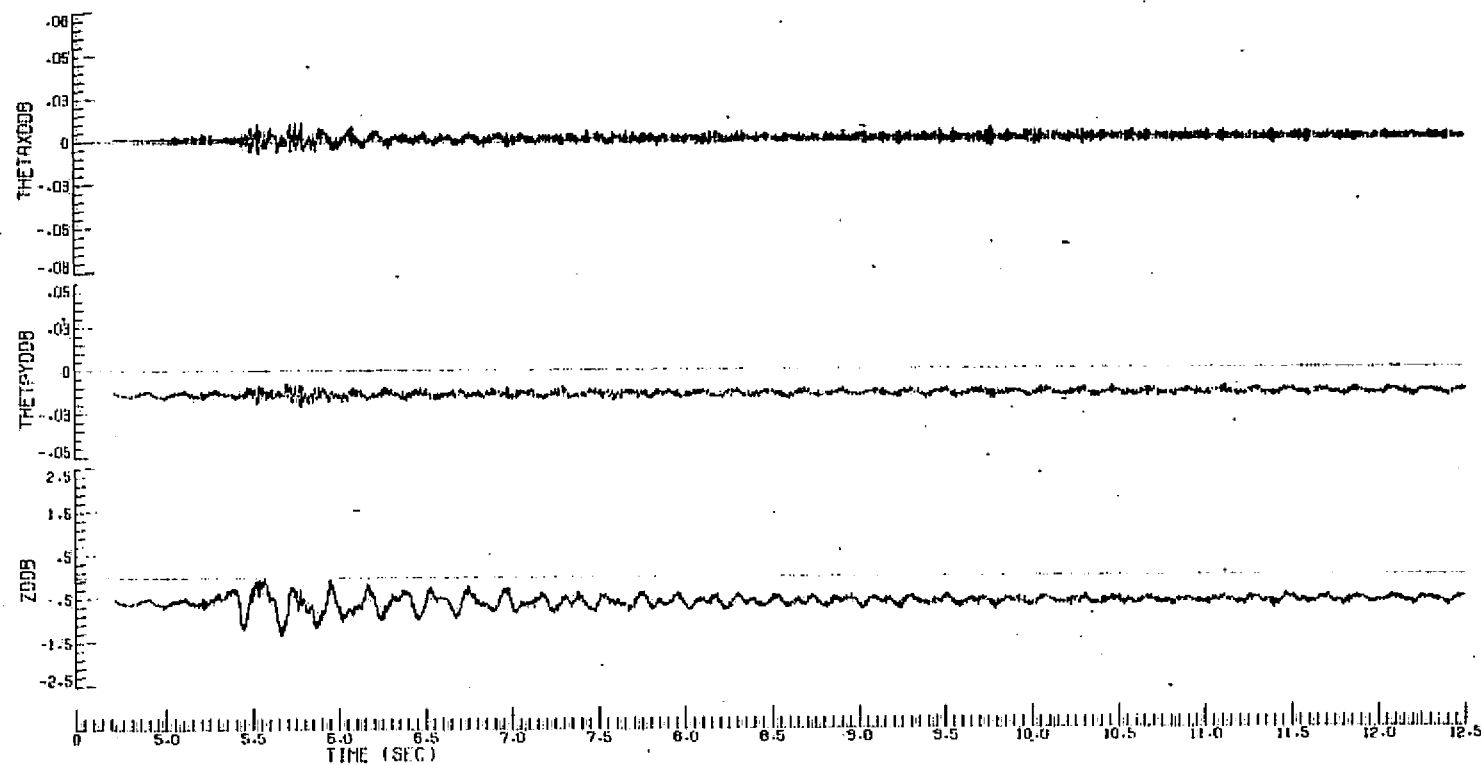
O = 21:21:55 = 76915 sec.

FIGURE 31. TC-4 Lift-Off - Forces & Moments - 1024 sps



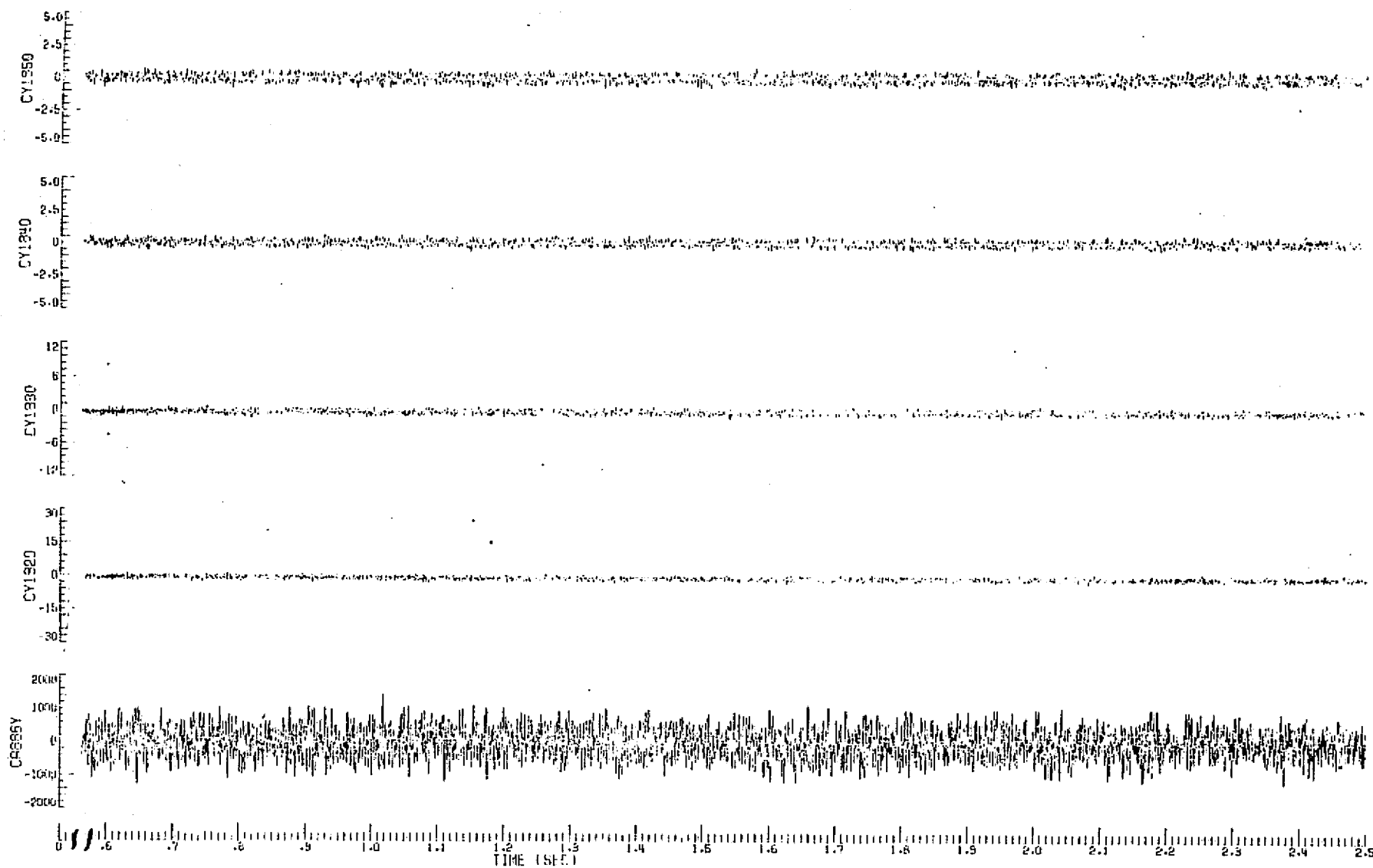
O = 21:21:55 = 76915 sec.

FIGURE 32. TC-4 Lift-Off - VLC cg Accelerations - 1024 sps



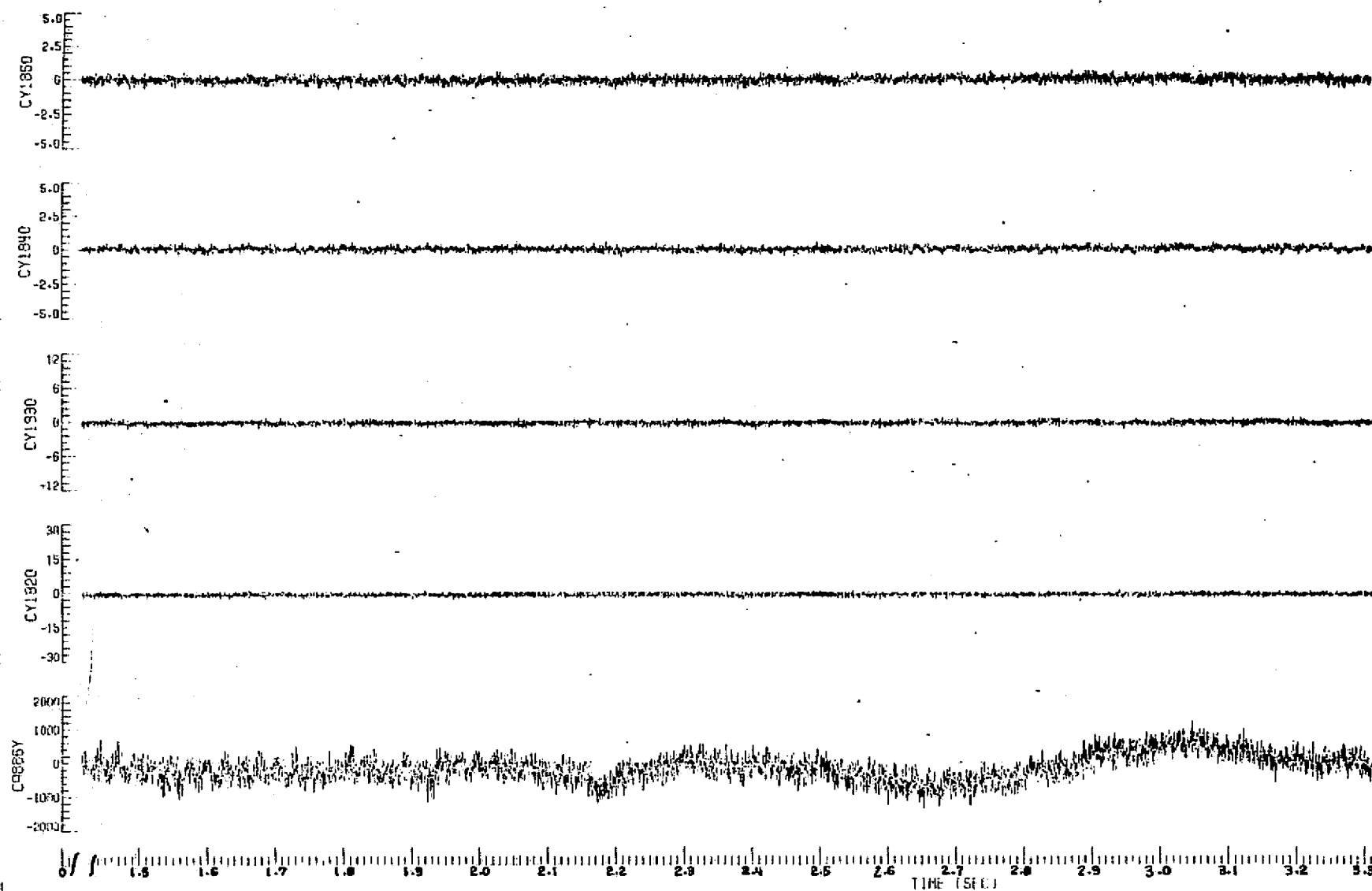
O = 21:21:55 = 76915 sec.

FIGURE 33. TC-4 - Lift-Off - Bus Accelerations - 1024 sps



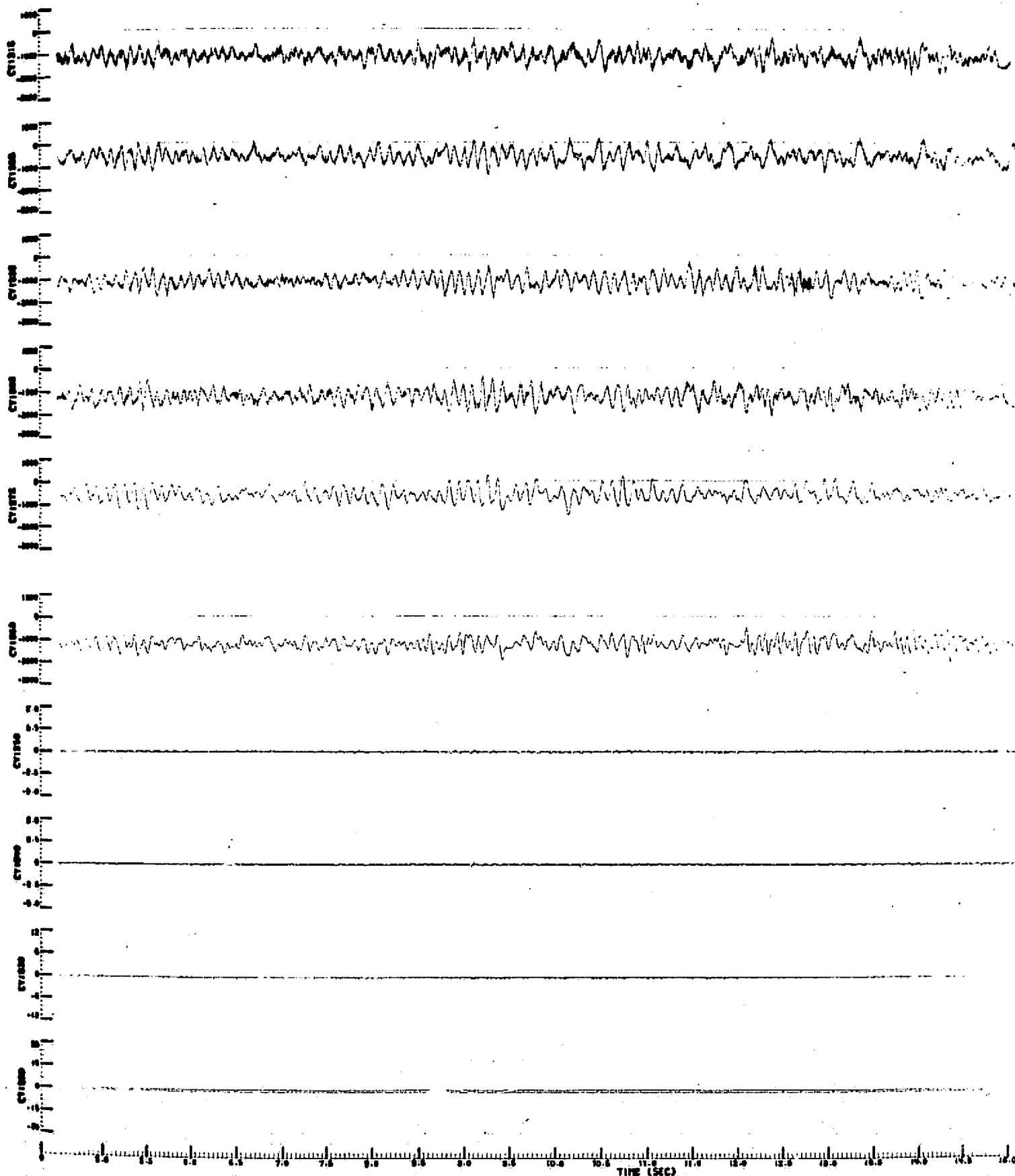
O = 21:22:35 = 76955 sec.

FIGURE 34. TC-4 MAX Q Vib & Mic - Part I - 4096 sps



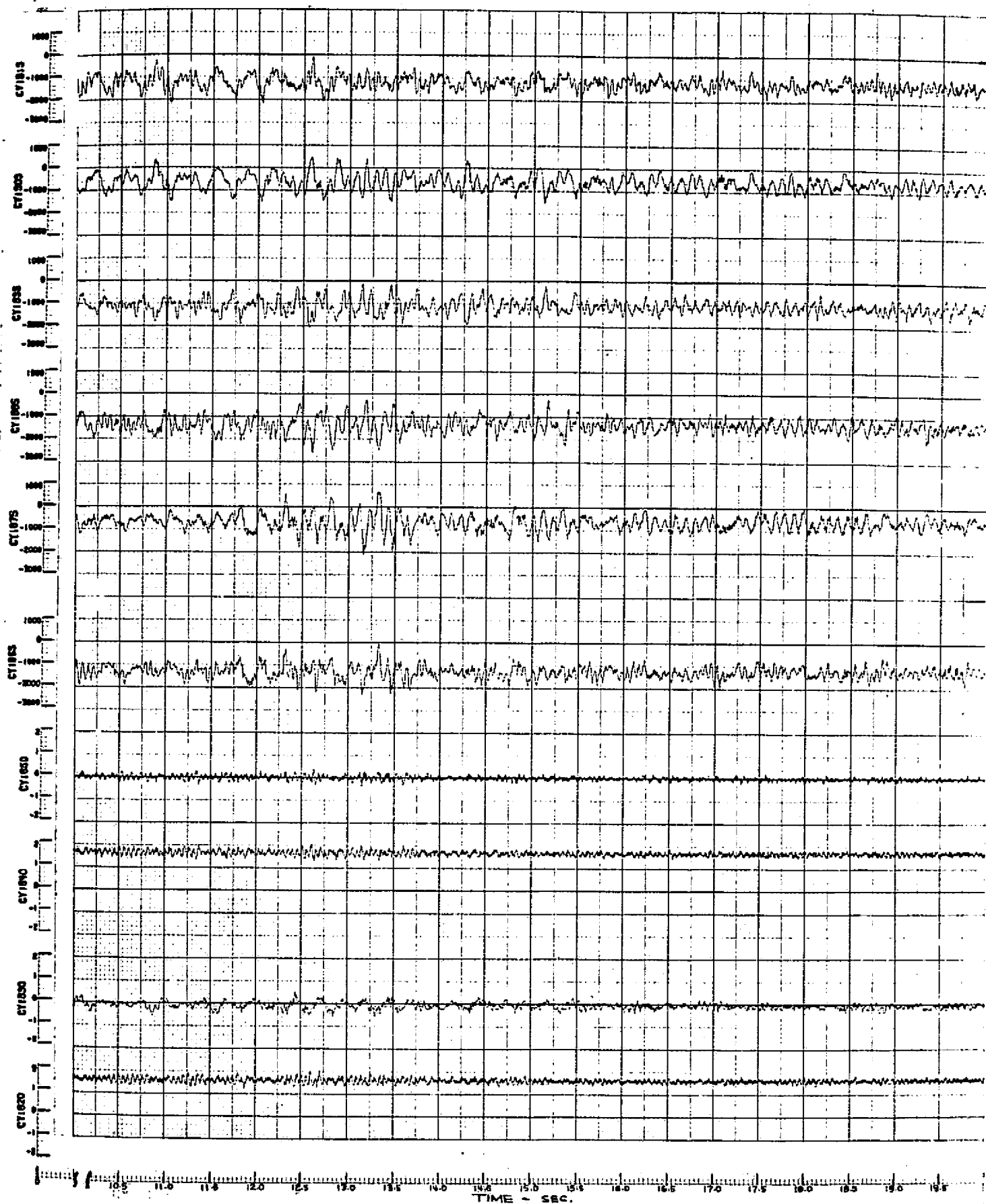
O = 21:22:39 = 76959 sec.

FIGURE 35. TC-4 MAX Q Vib & Mic - Part 2 - 4096 sps



O = 21:22:29 = 76949 sec.
Part I

FIGURE 36. TC-4 - MAX Q - STRAIN & Vib - 1024 sps

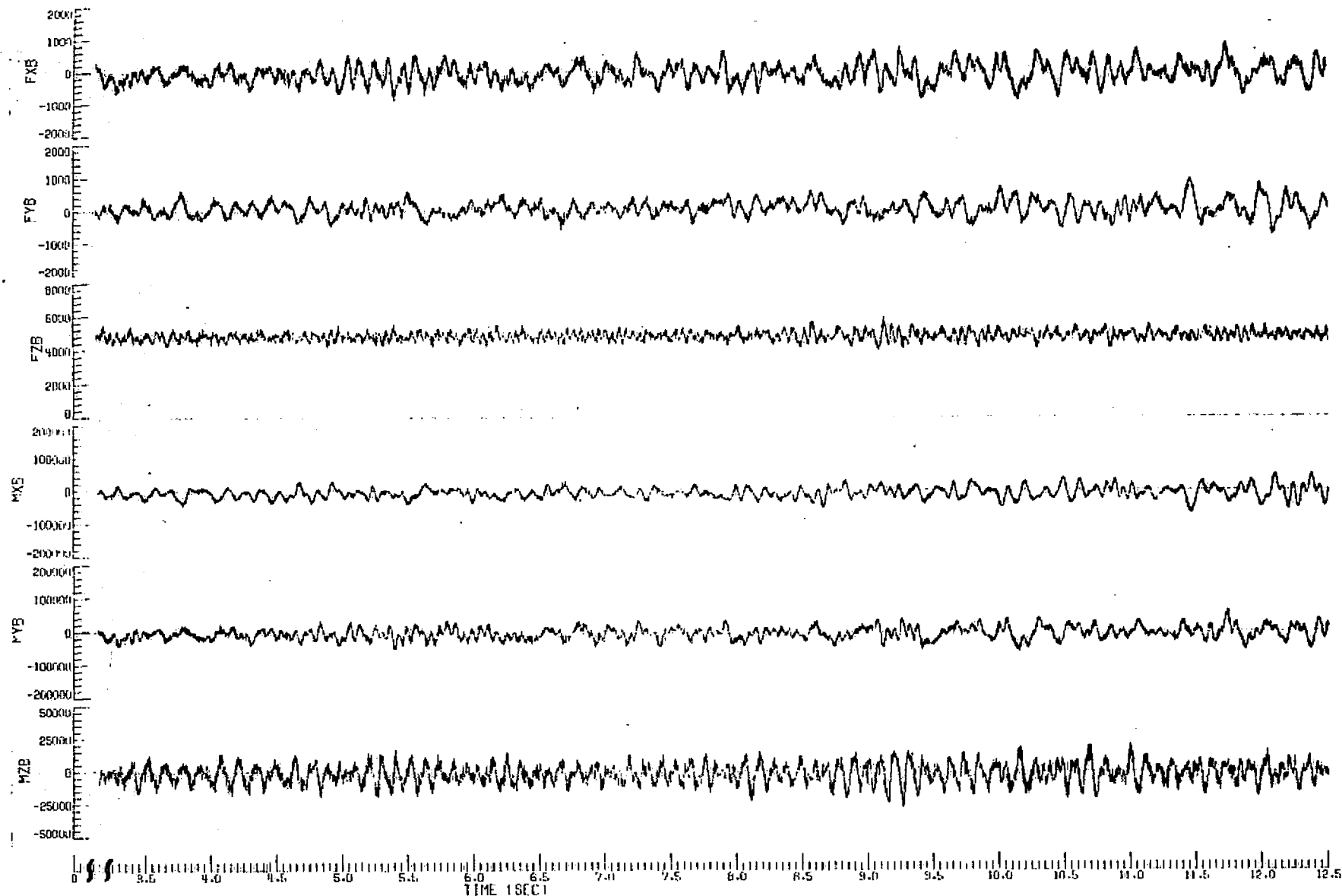


O = 13:48:34 = 49714

Part 2

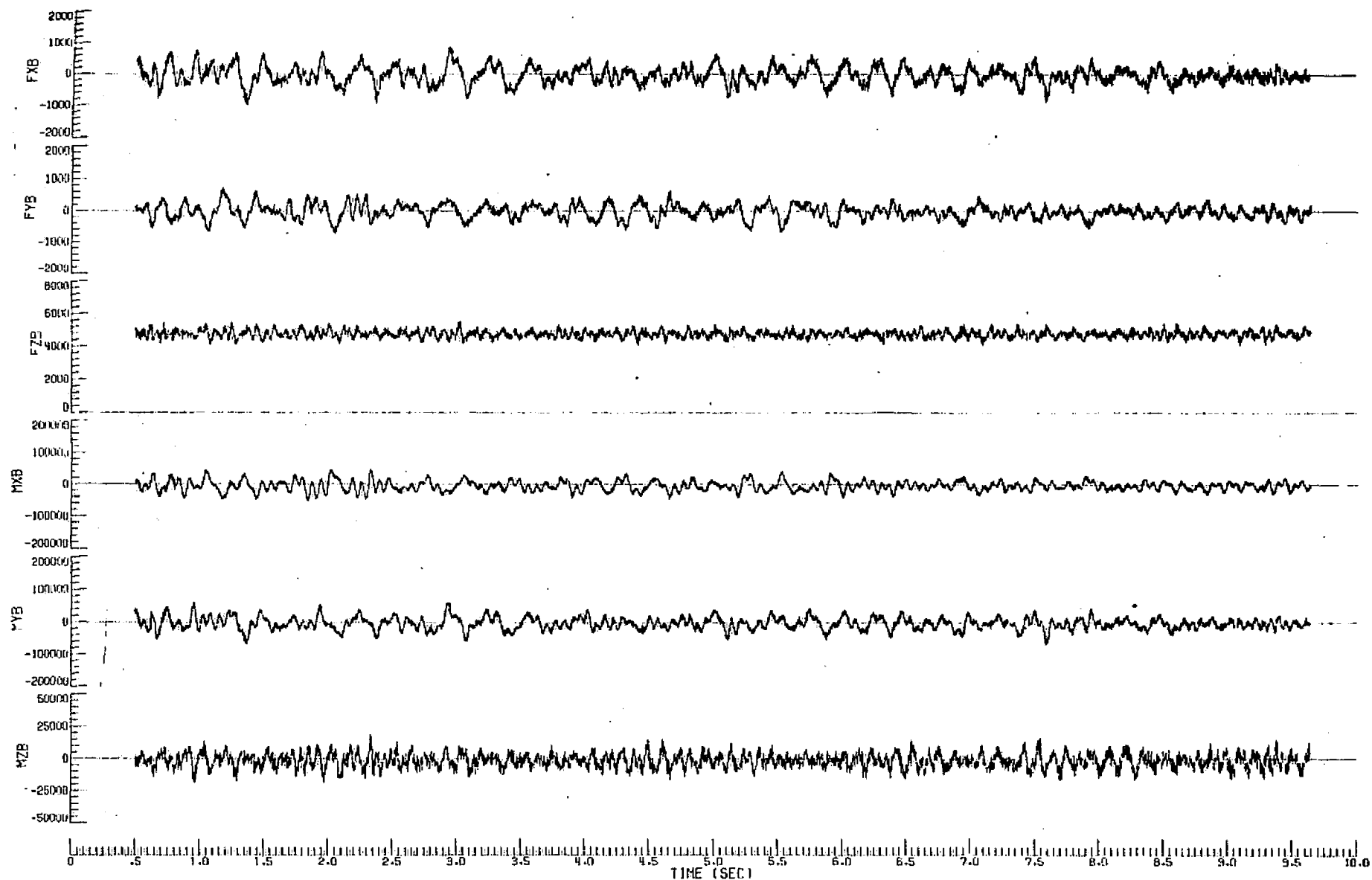
FIGURE 37. TC-1 MAX Q - STRAIN & Vib

- 1024 sps



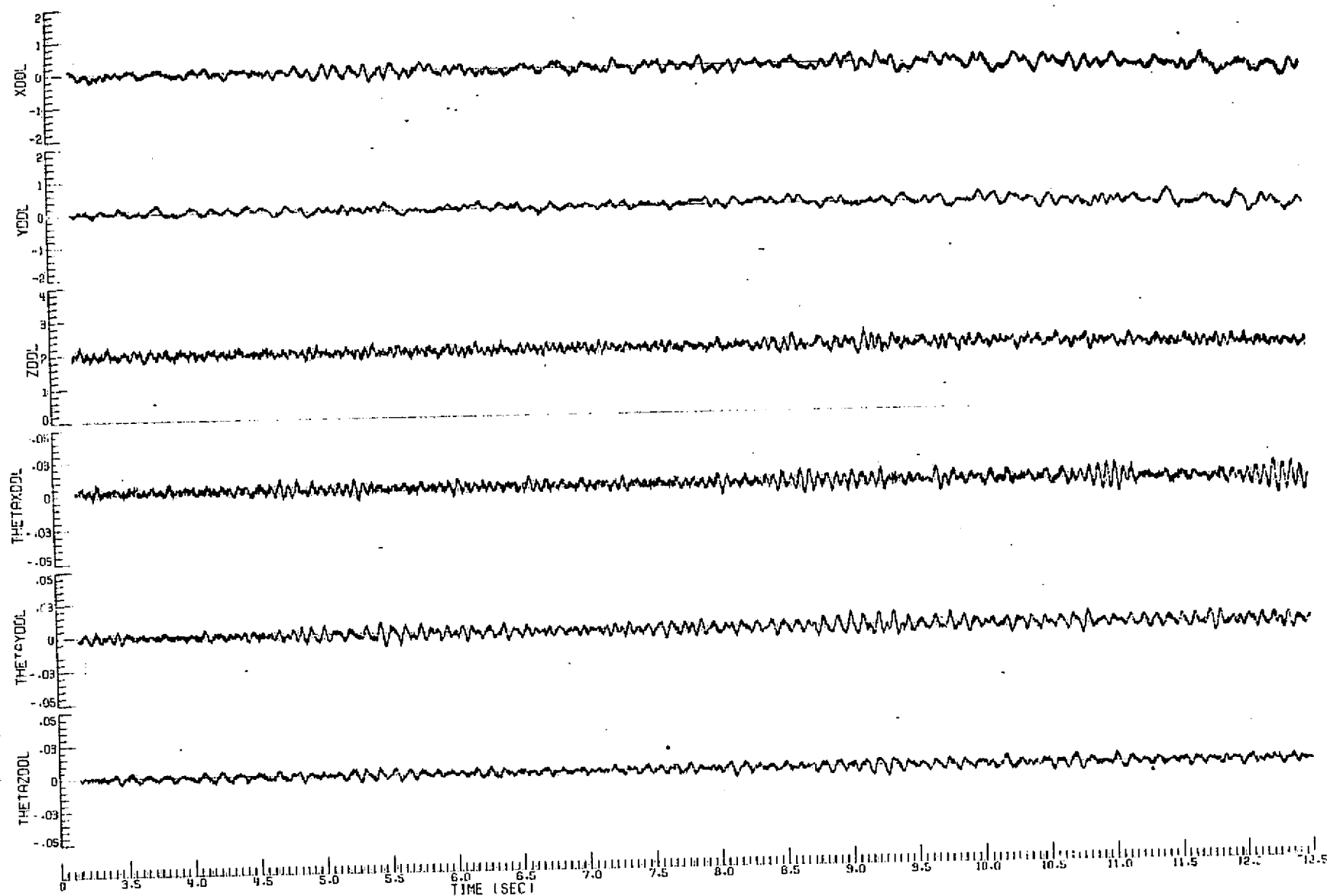
O = 21:22:29 = 76949 sec.

FIGURE 38. TC-4 MAX Q - Forces & Moments - Part I - 1024 sps



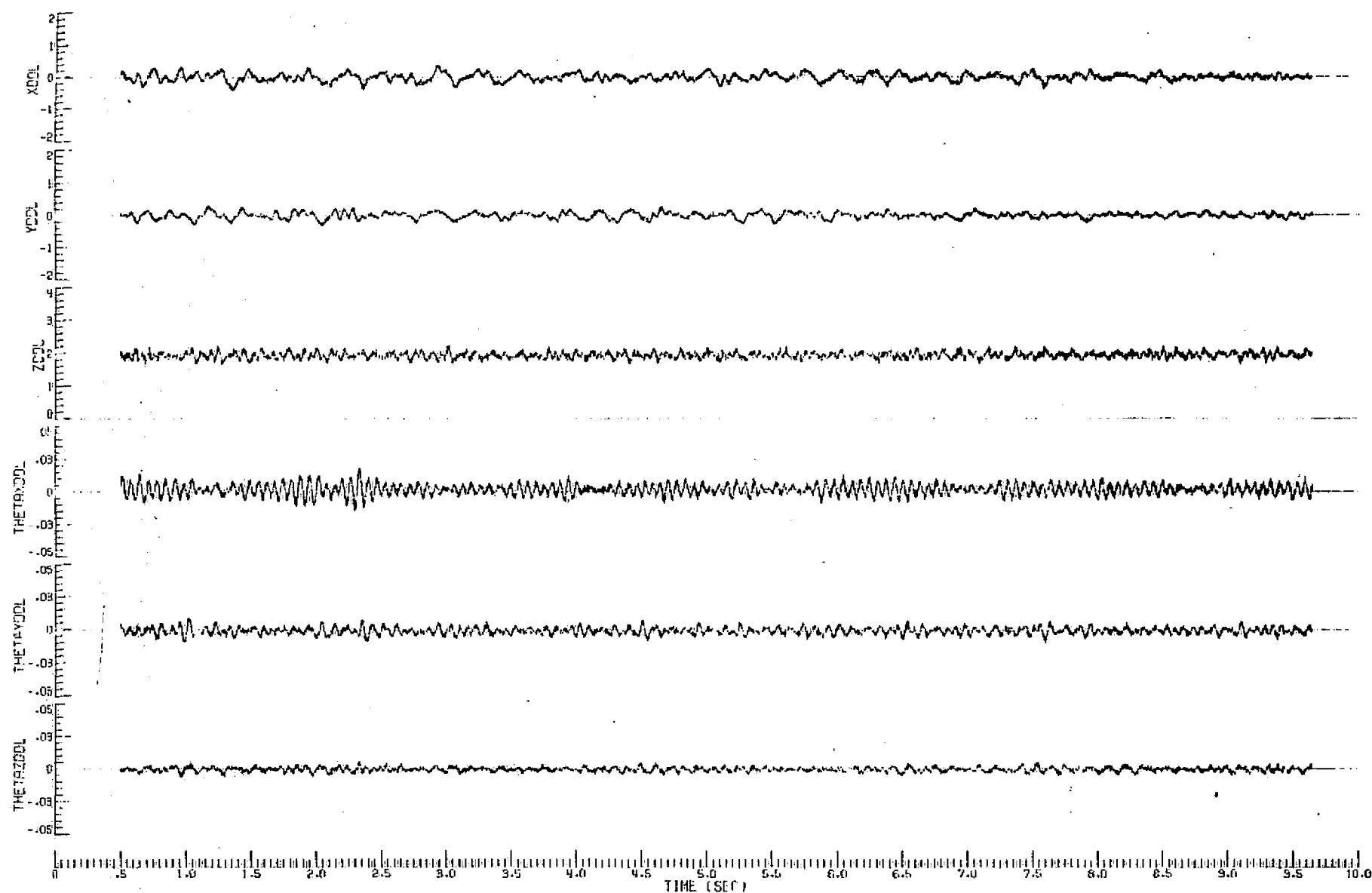
O = 21:22:41 = 76961 sec.

FIGURE 39. TC-4 - MAX Q - Forces & Moments - Part 2 - 1024 sps



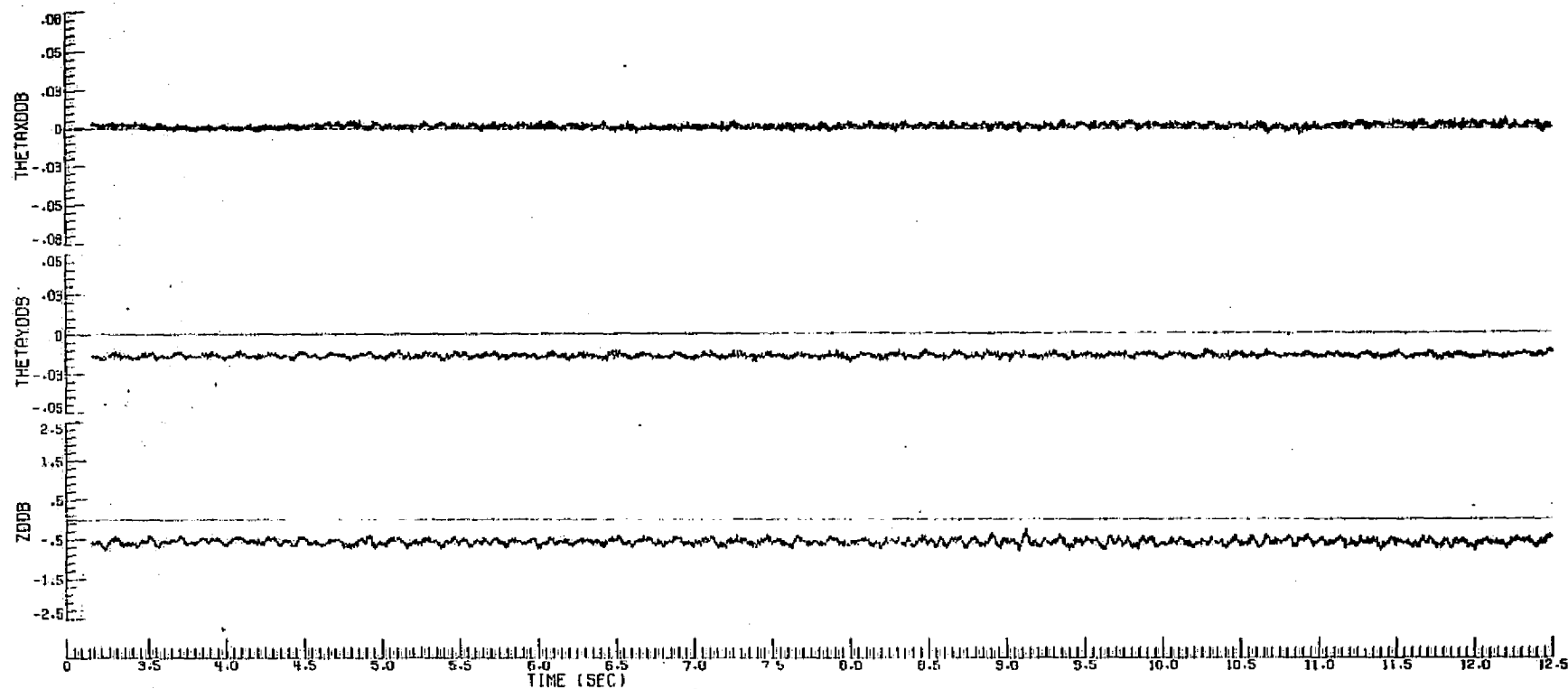
O = 21:22:29 = 76949 sec.

FIGURE 40. TC-4 - MAX Q VLC cg Accelerations - Part I - 1024 sps



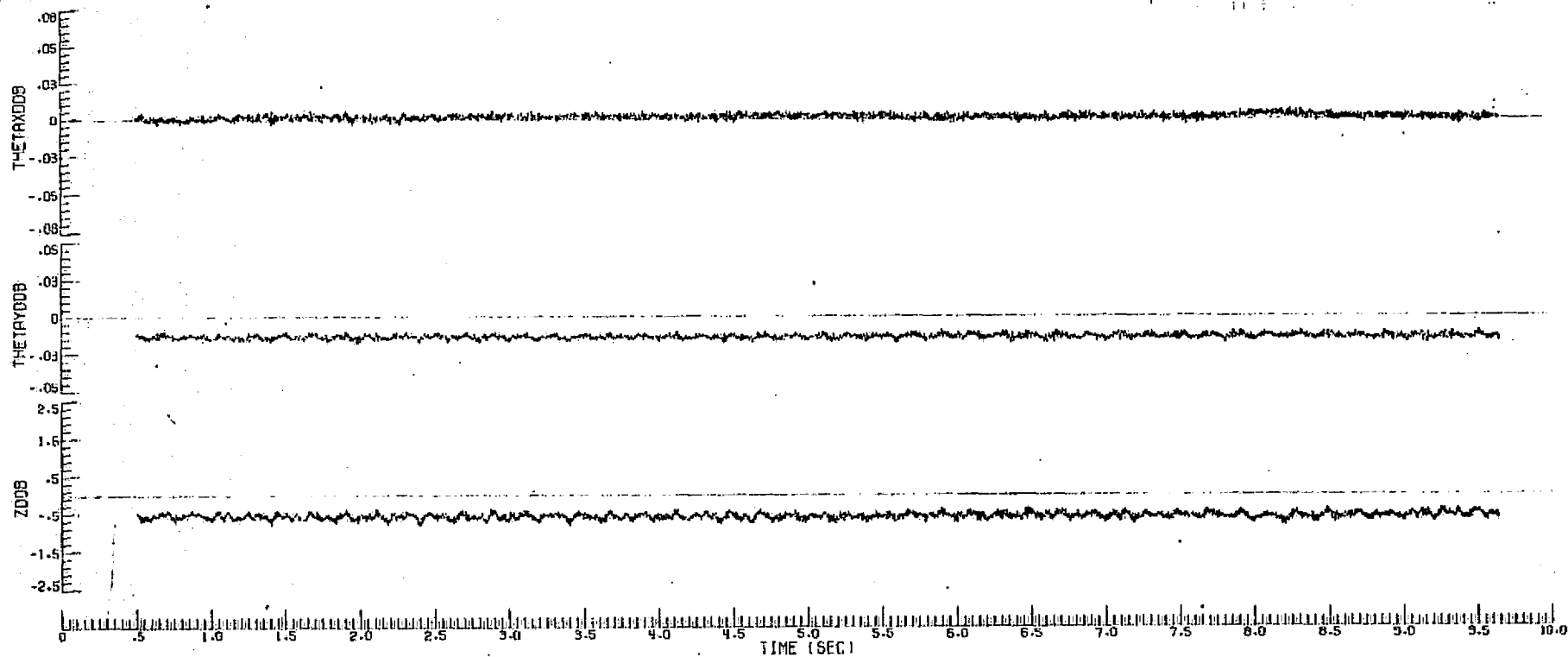
O = 21:22:41 = 76961 sec.

FIGURE 41. TC-4 - MAX Q - VLC cg Accelerations - Part 2 - 1024 sps



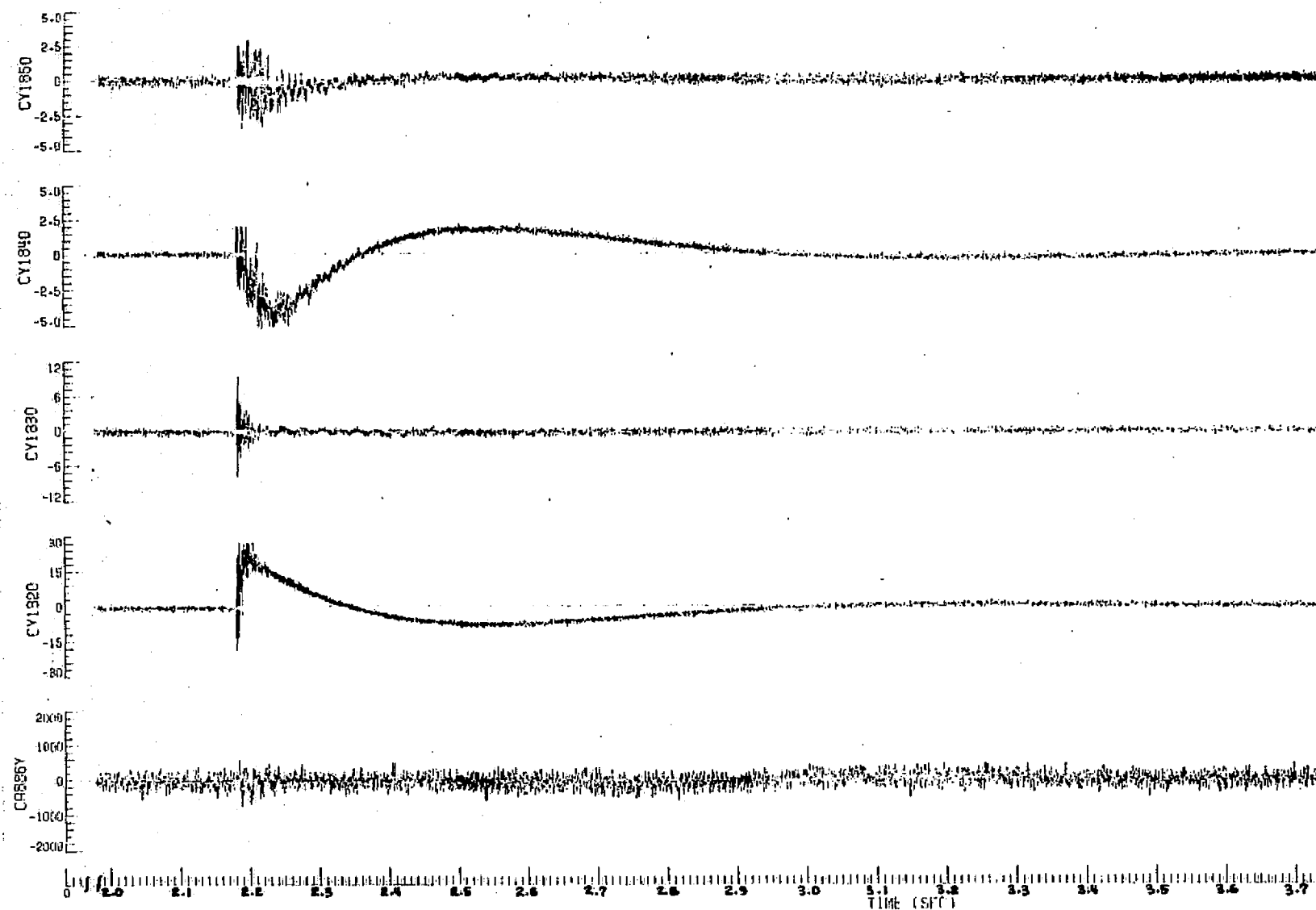
O = 21:22:29 = 76949 sec.

FIGURE 42. TC-4 - MAX Q - Bus Accelerations - Part I - 1024 sps

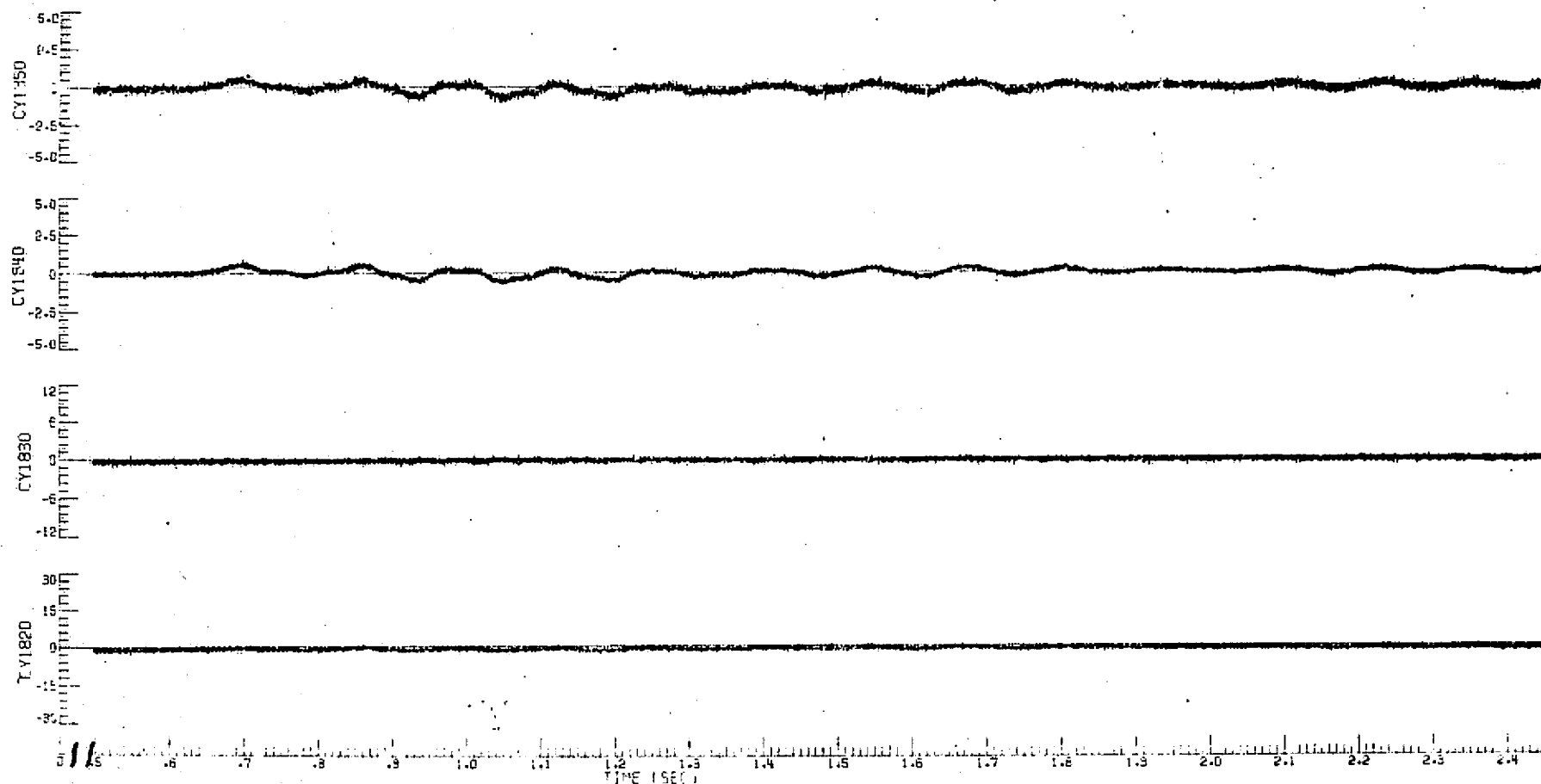


O = 21:22:41 = 76961 sec.

FIGURE 43. TC-4 - MAX Q - Bus Accelerations - Part 2 - 1024 sps

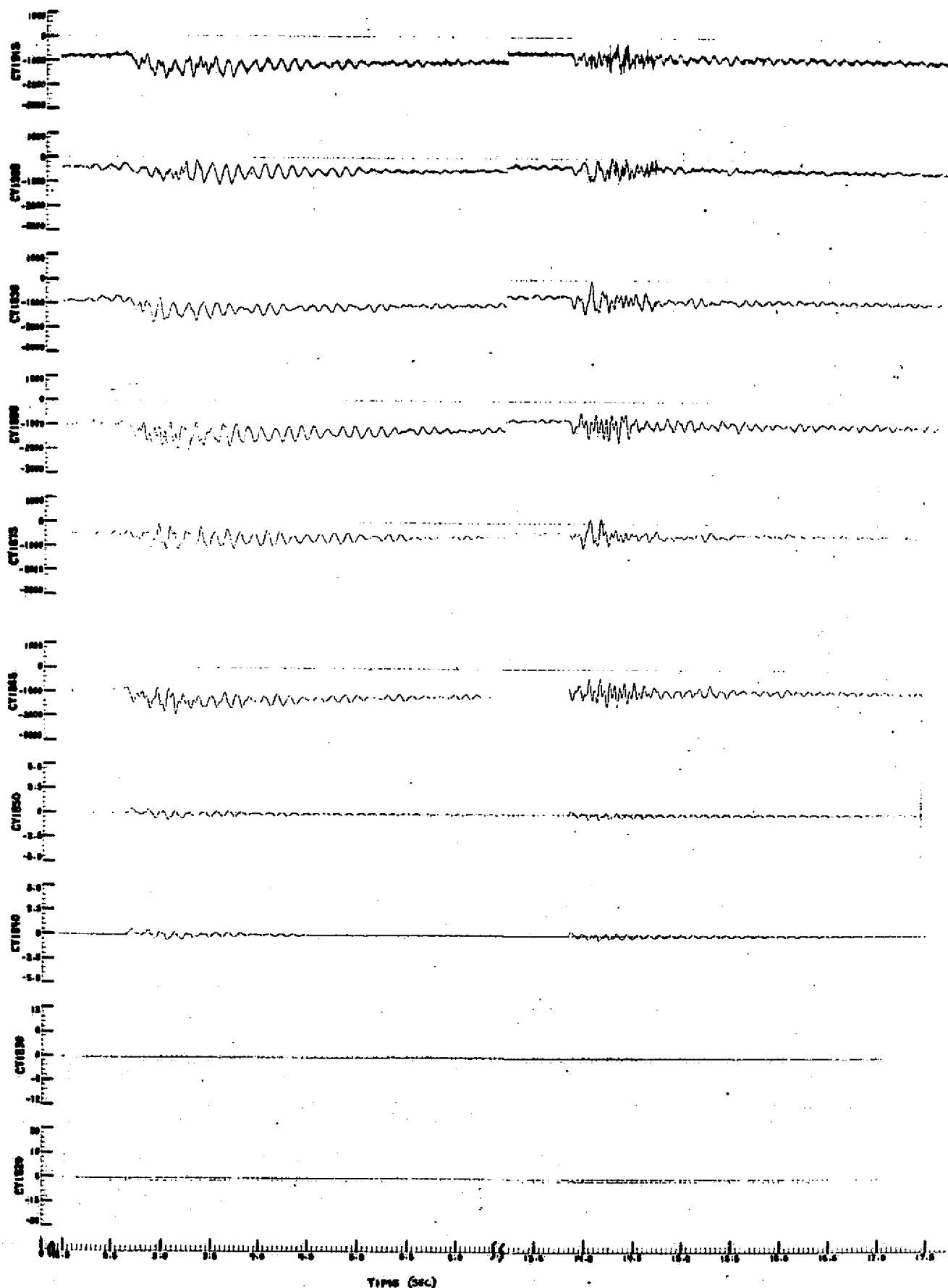


O = 21:23:38 = 77018 sec.



O = 21:23:50 = 77030 sec.

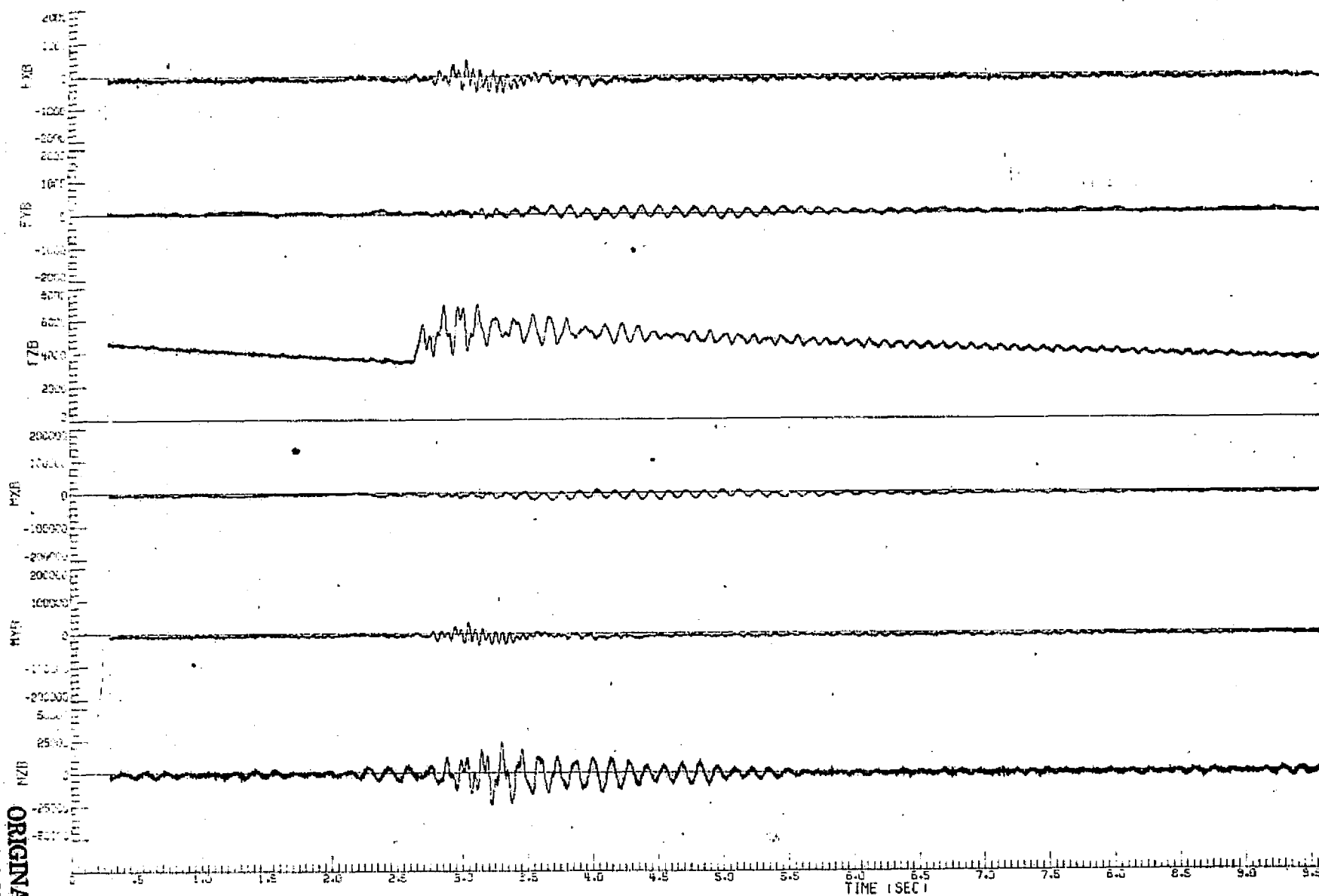
FIGURE 45. TC-4 - Stage I Ignition - Vlb - 4096 sps



O = 21:23:48 = 77028 sec.

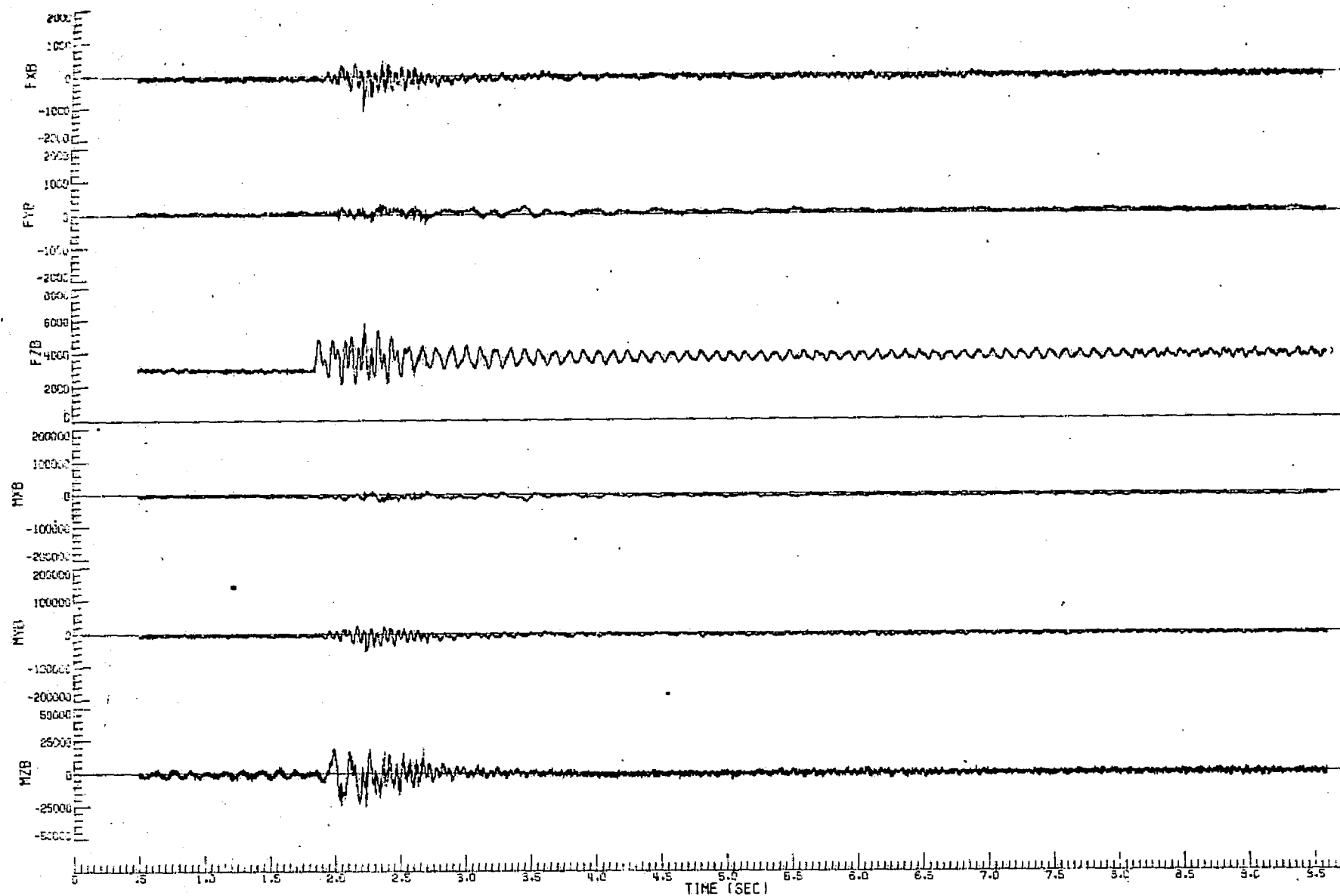
Figure 46. TC-4 - Stage I Ignition & Jettison SRM - Strain & Vib - 1024 sps

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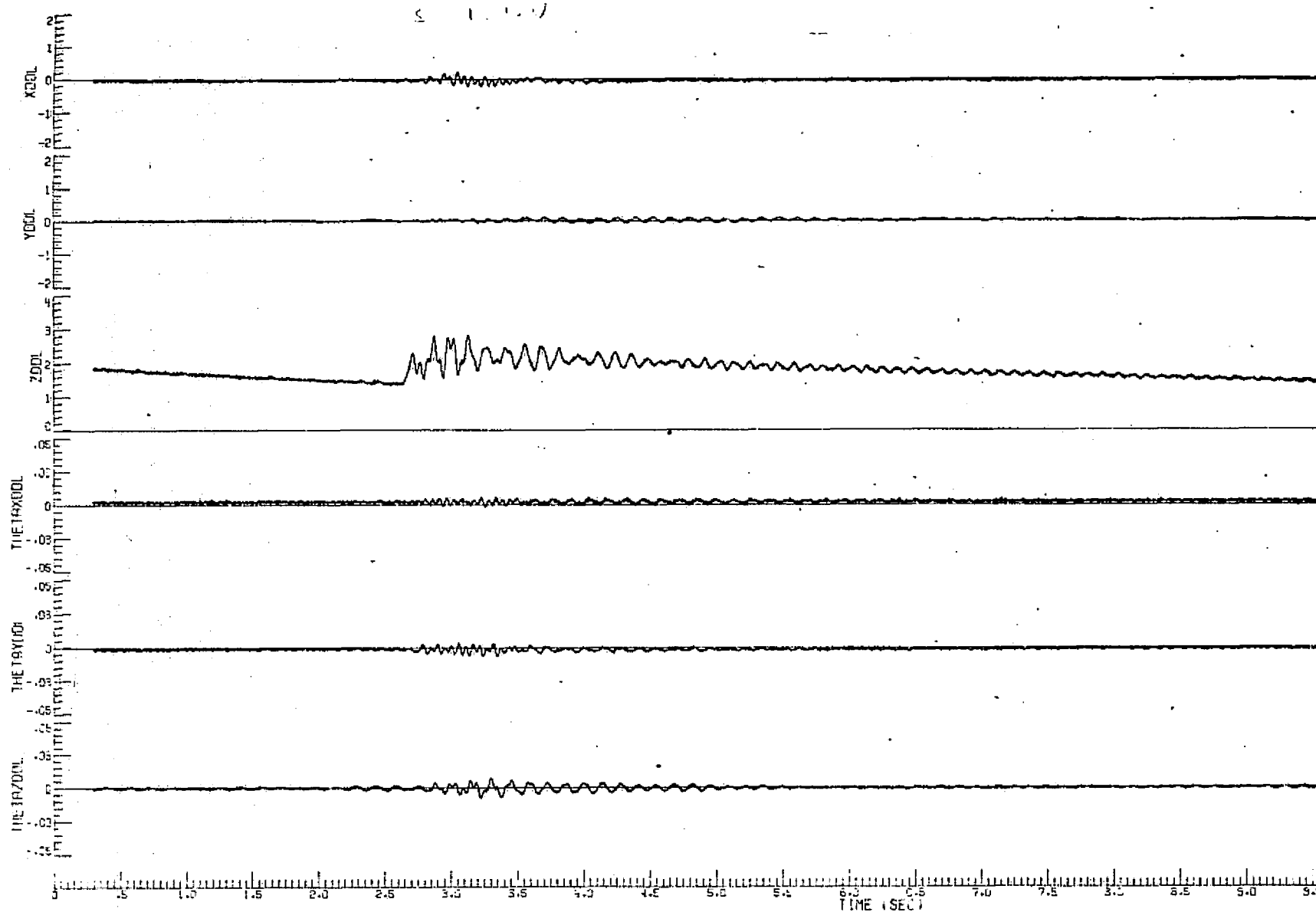
O = 21:23:48 = 77028 sec.

FIGURE 47. TC-4 - Stage I Ignition - Forces & Moments - 1024 sps



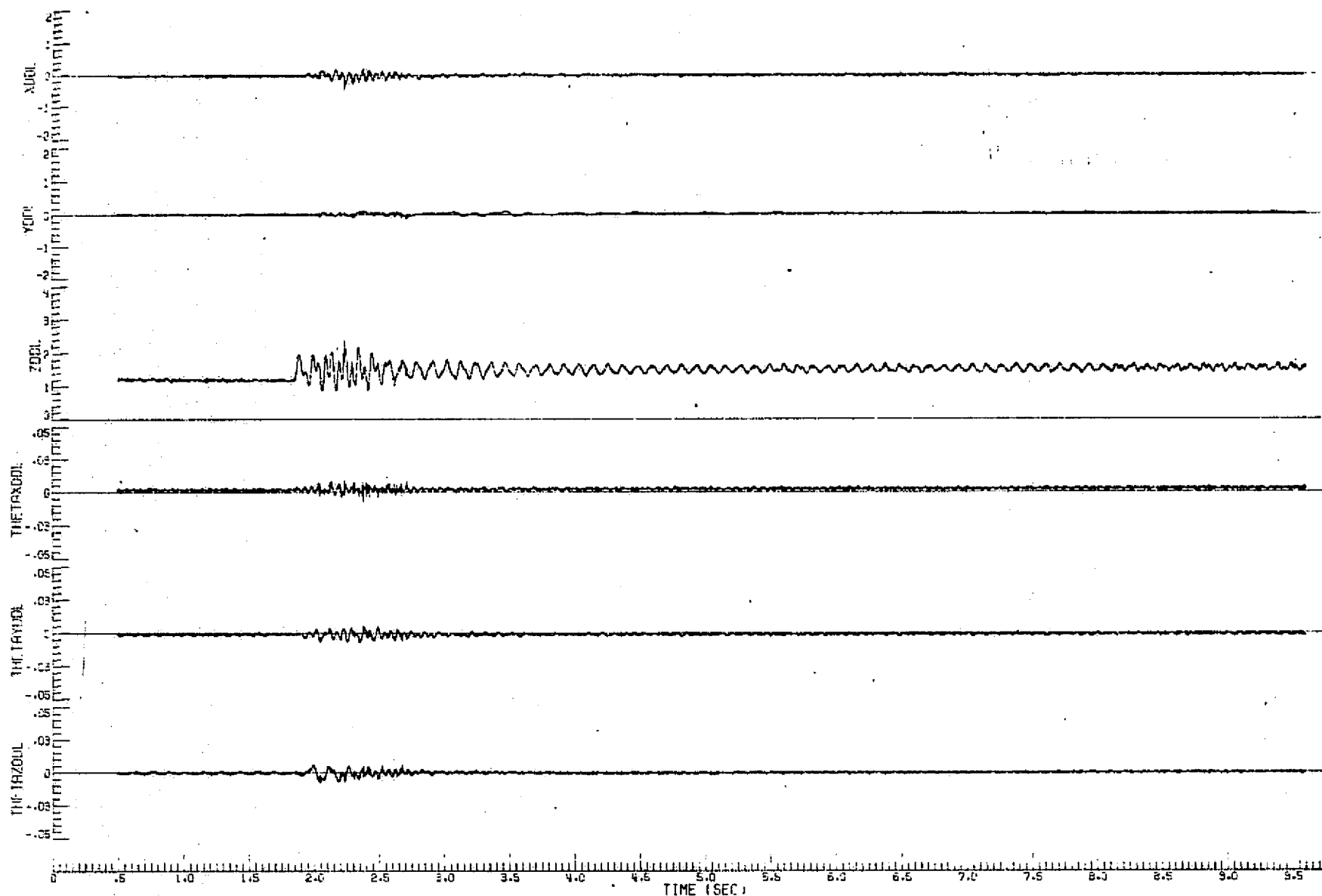
O = 21:24:00 = 77040 sec.

FIGURE 48. TC-4 - Jettison SRM - Forces & Moments - 1024 sps



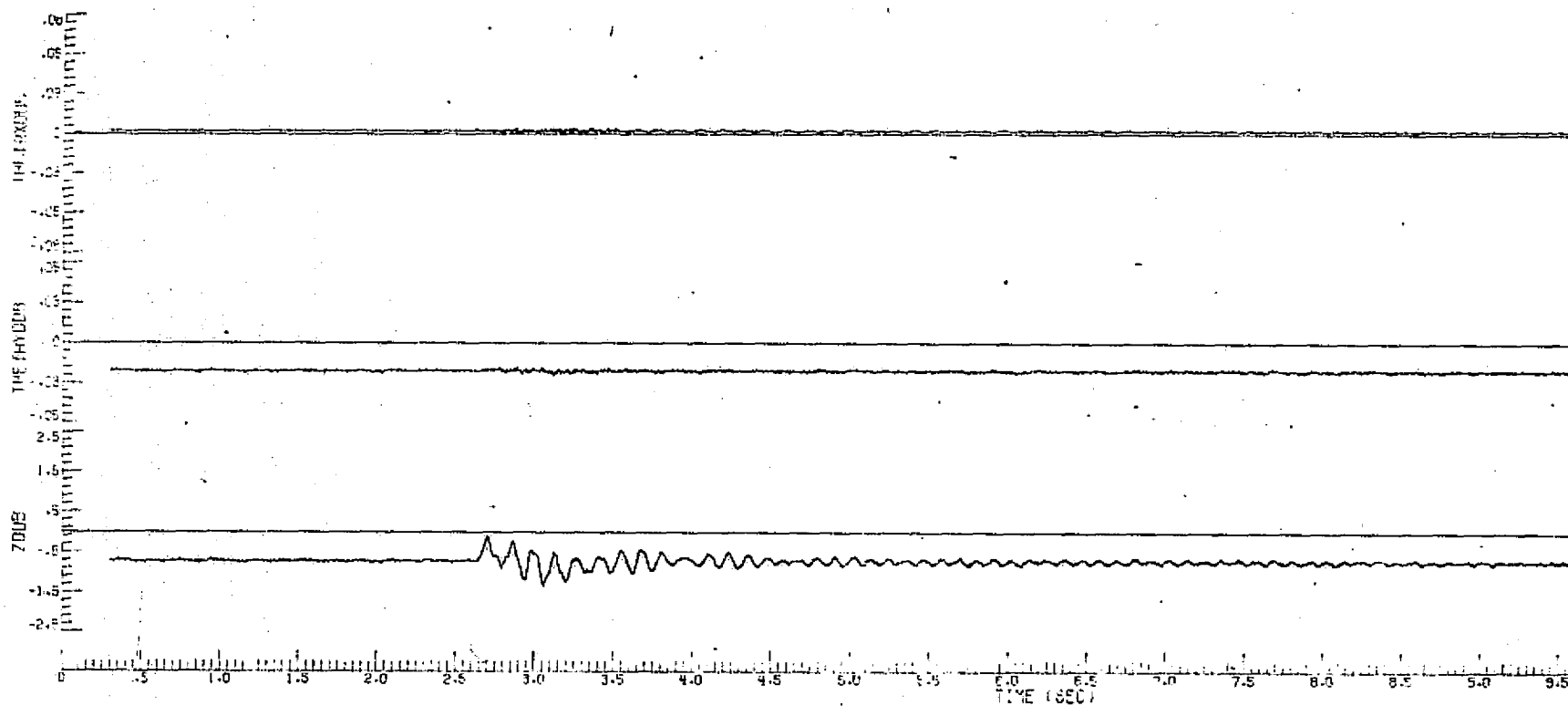
O = 21:23:48 = 77028 sec.

FIGURE 49. TC-4 - Stage I Ignition - VLC cg Accelerations - 1024 sps



O = 21:24:00 = 77040 sec.

FIGURE 50. TC-4 - Jettison SRM - VLC cg Accelerations - 1024 sps

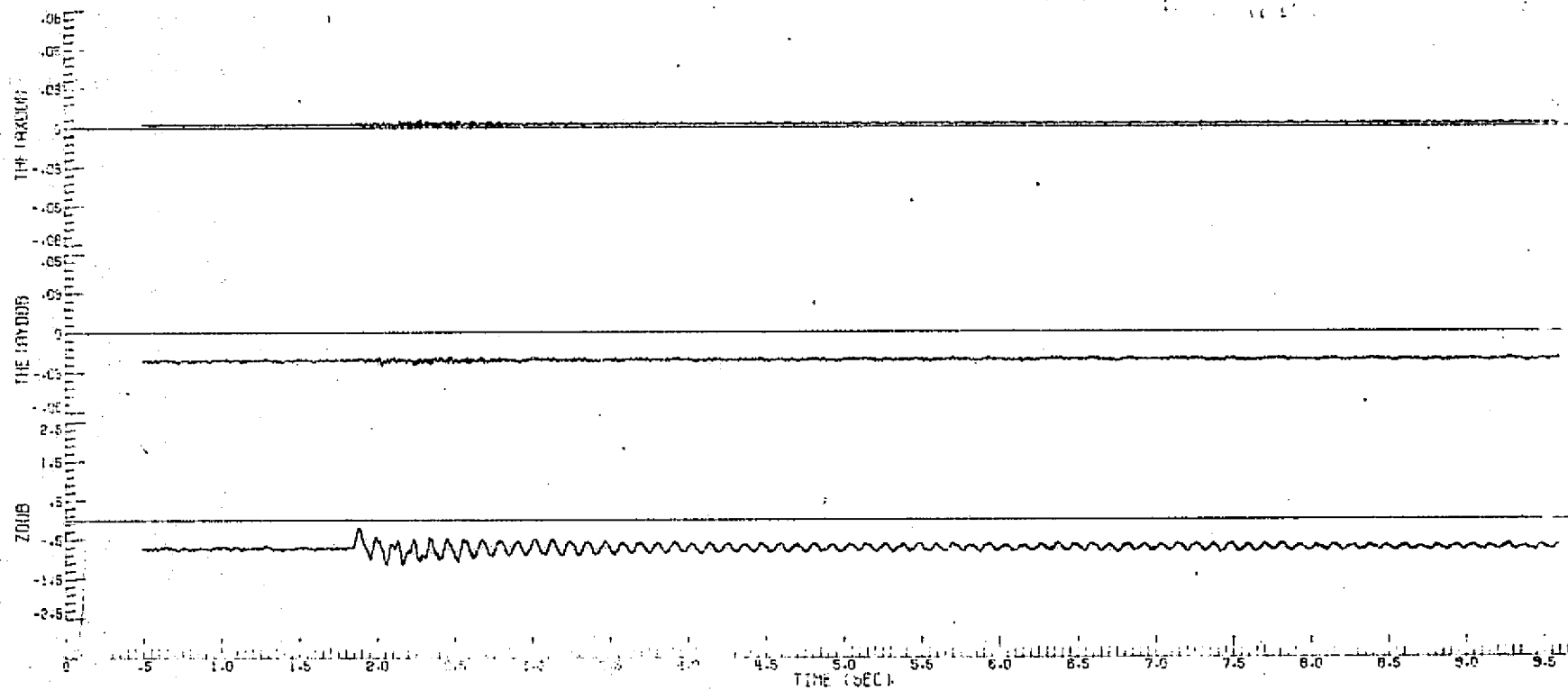


O = 21:23:48 = 77028 sec.

FIGURE 51. TC-4 - Stage I Ignition - Bus Accelerations - 1024 sps

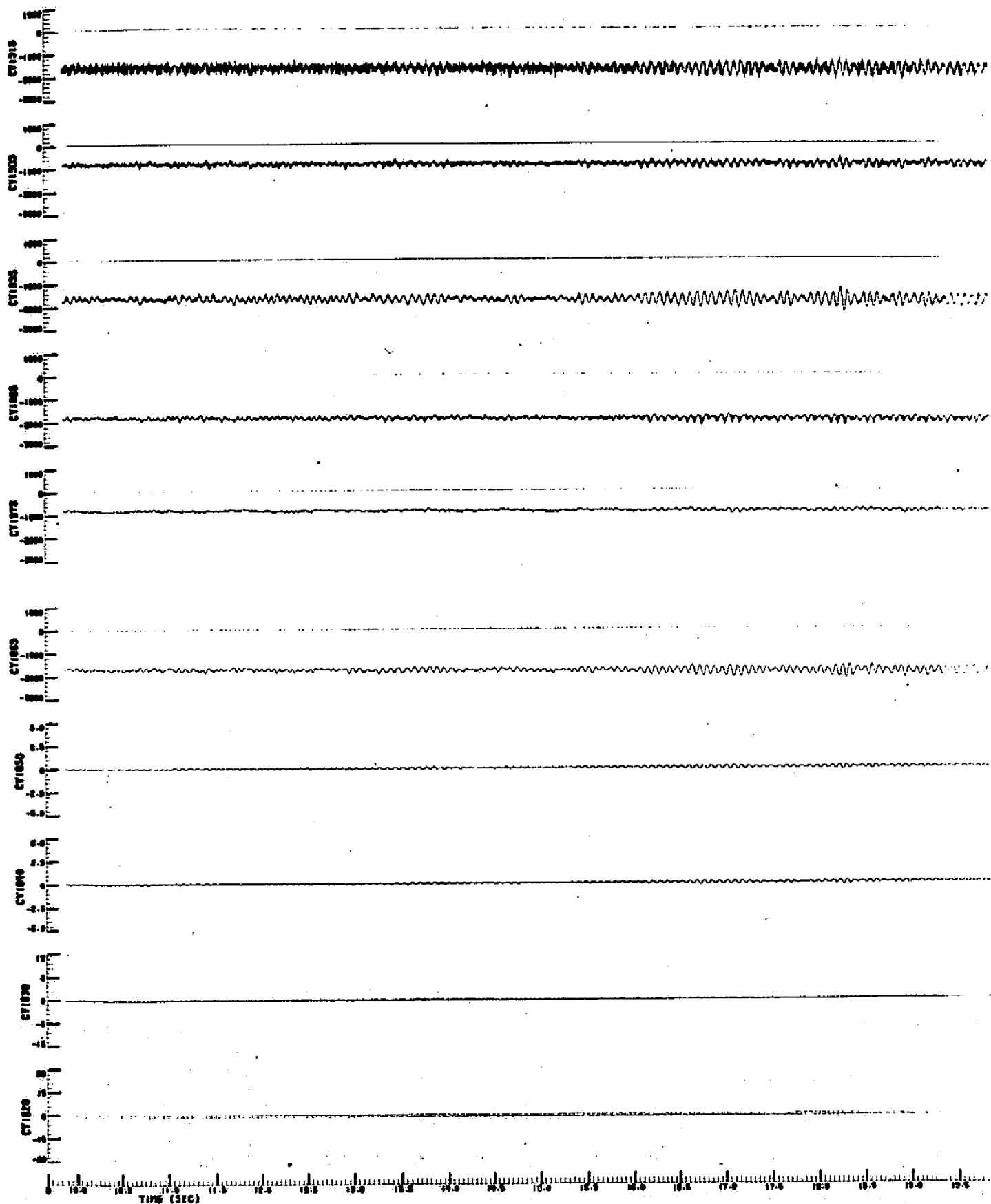
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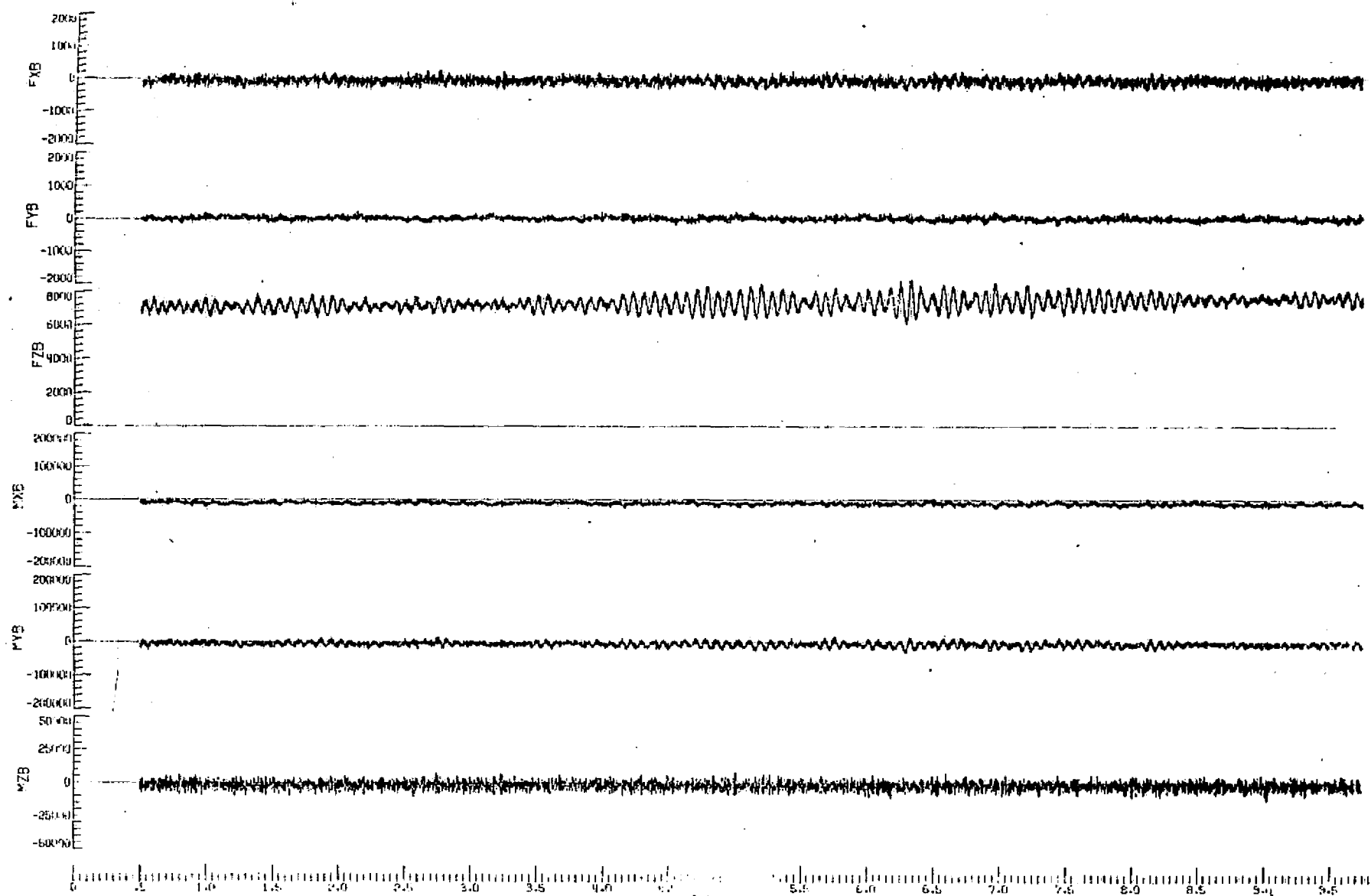
C = 21:24:00 = 77040 sec.

FIGURE 52. TC-4 - Jettison SRM - Bus Accelerations - 1024 sps



O = 21:25:37 = 77137 sec.

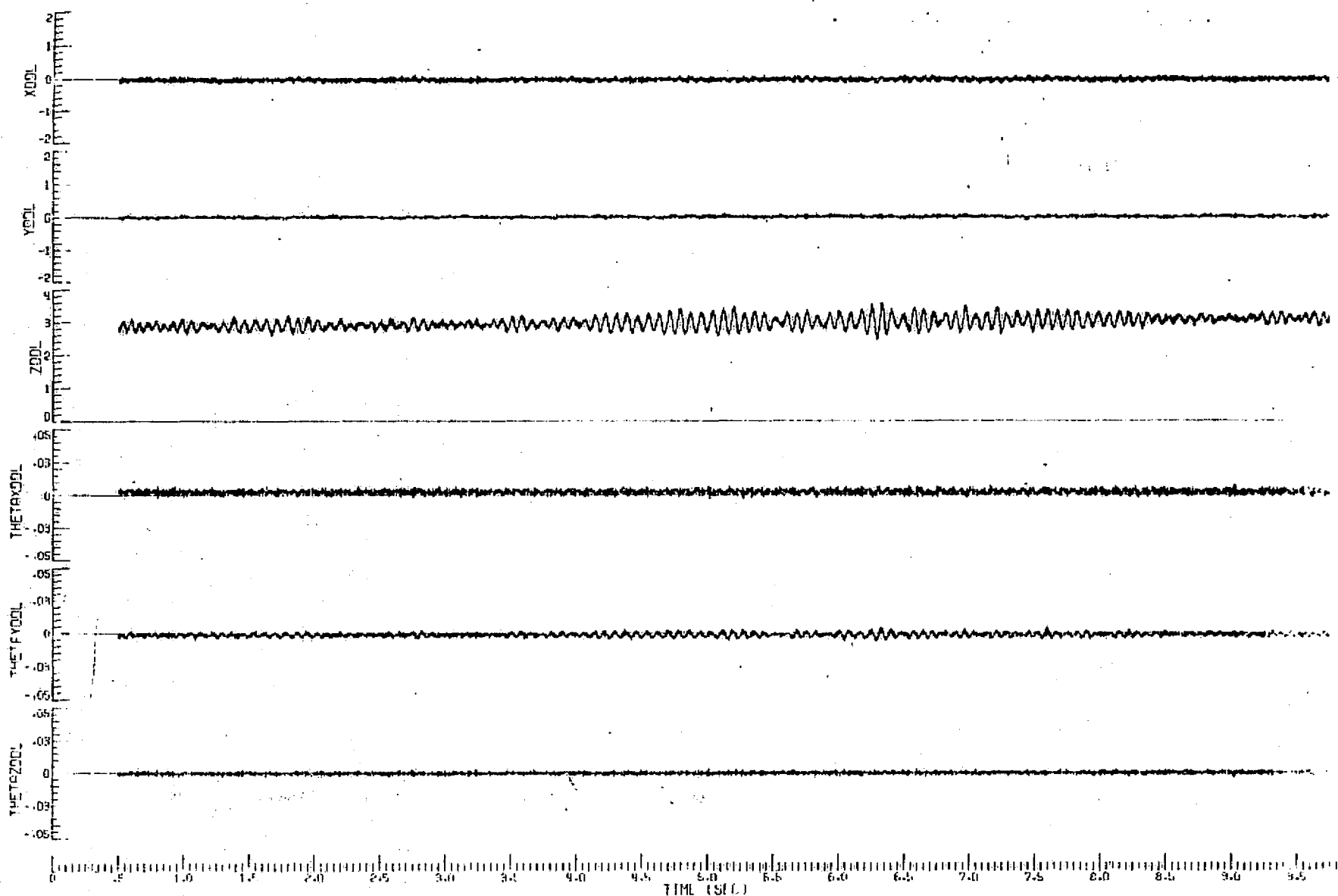
FIGURE 53. TC-4 - FLMN-1, Strain & Vib, T+227 - T+236.5 - 1024 sps



O = 21:25:49 = 77149 sec.

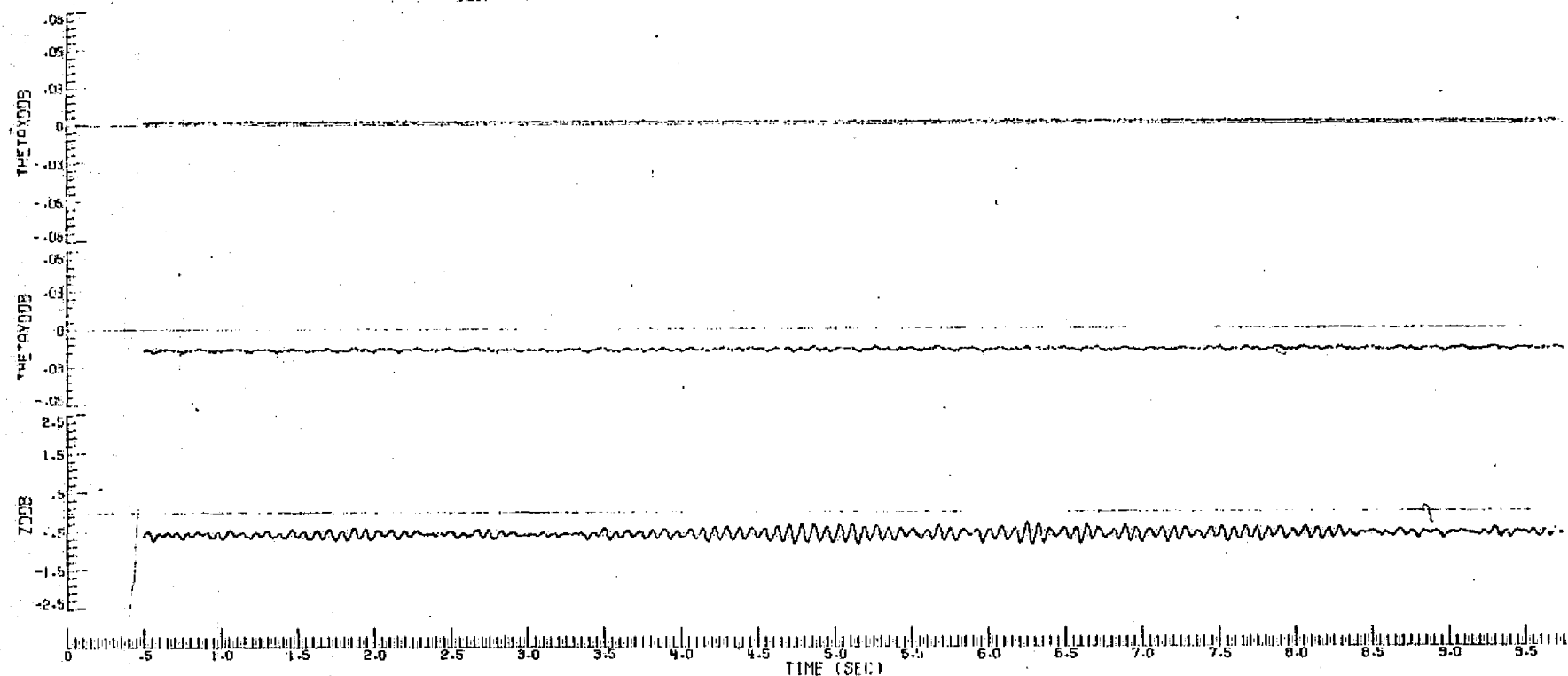
FIGURE 54. TC-4 - FLMN-1, Forces & Moments, T+229.5 - T+238.5 - 1024 sps

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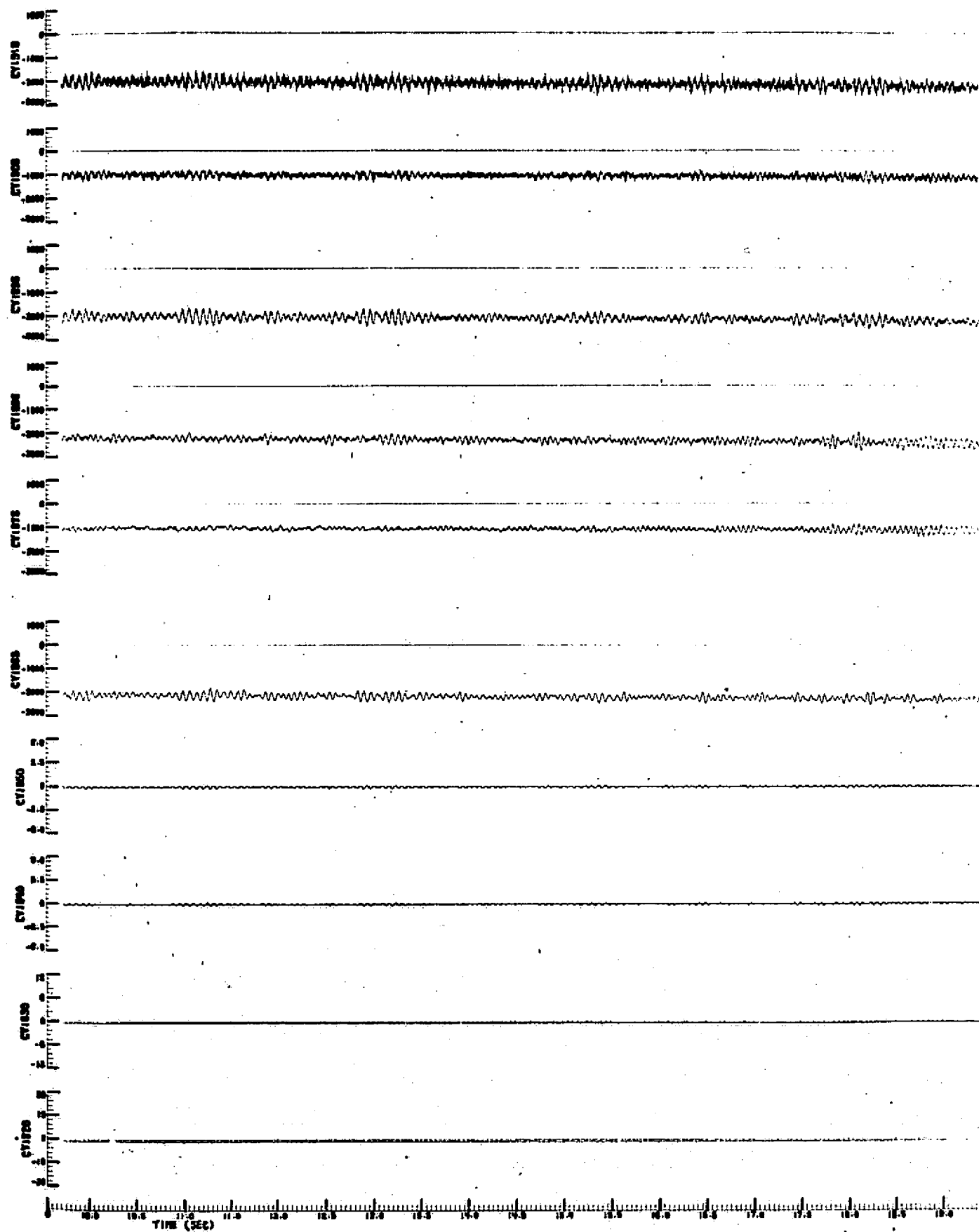
O = 21:25:49 = 77149 sec.

FIGURE 55. TC-4 FLMN-1 - VLC cg Acceleration - T+229.5 - T+238.5 - 1024 sps



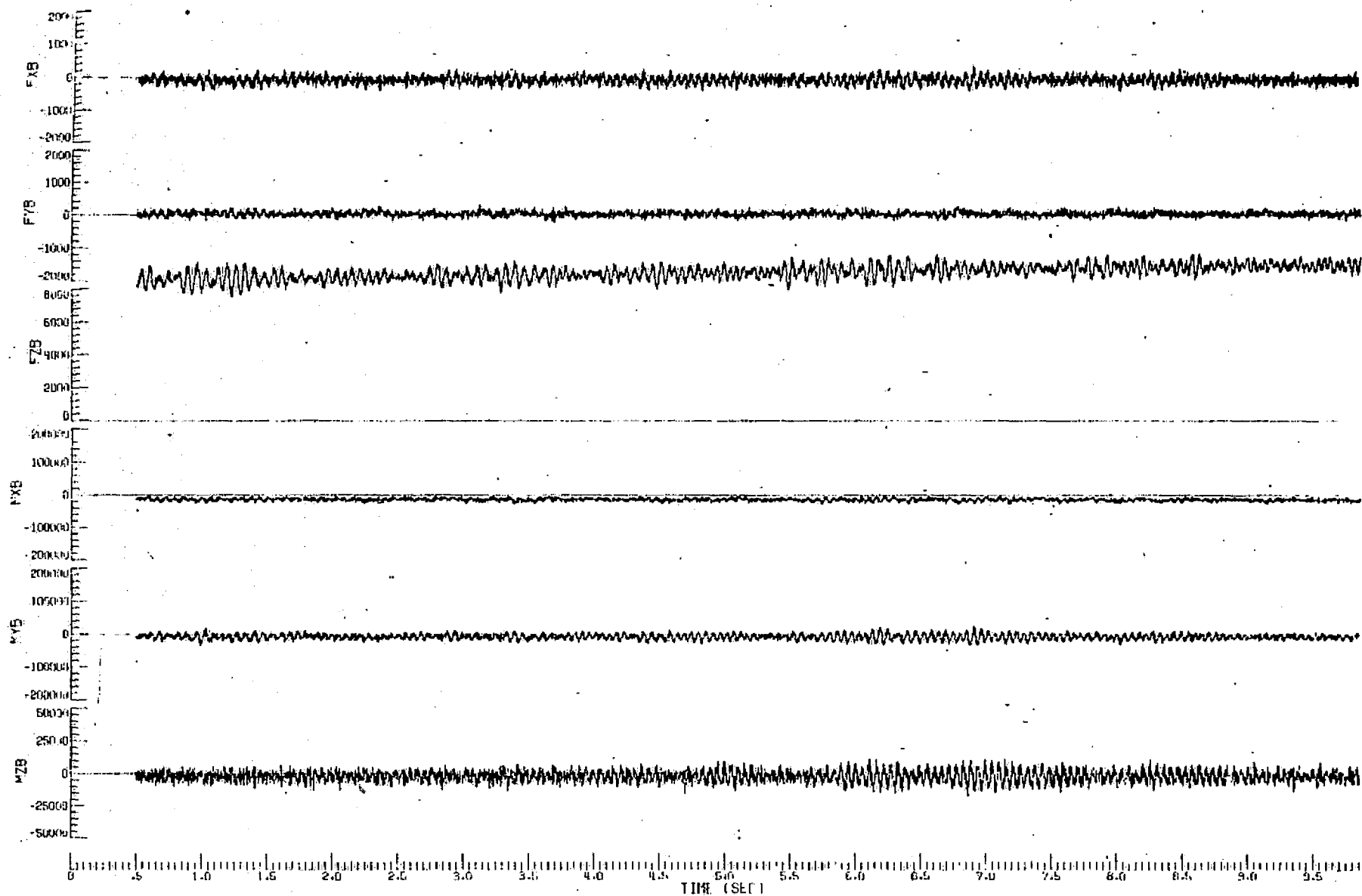
O = 21:25:49 = 77149 sec.

FIGURE 56. TC-4 FLMN-1 - Bus Acceleration - T+229.5 - T+238.7 - 1024 sps



O = 21:25:57 = 77157 sec.

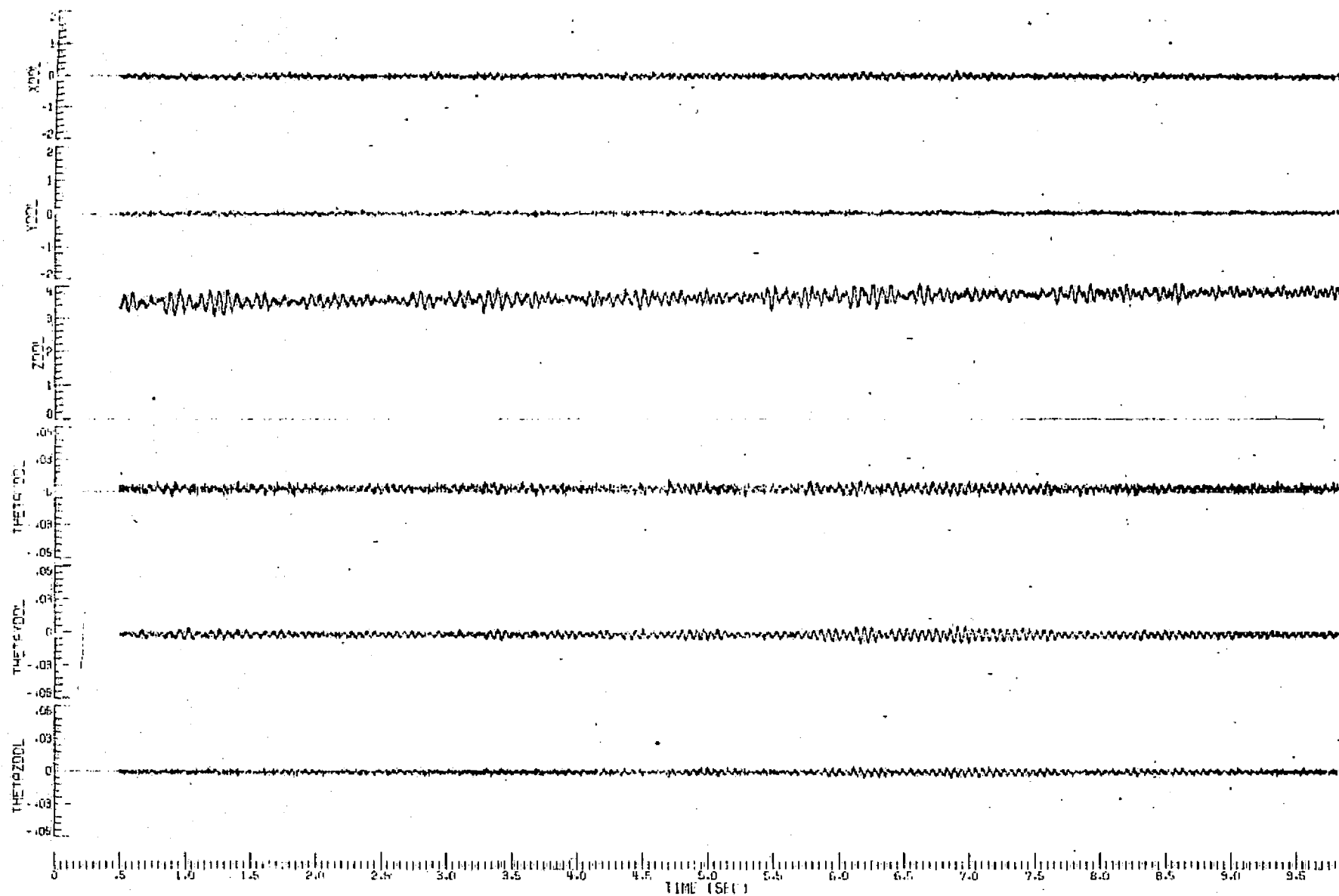
FIGURE 57. TC-4 FLMN-2 - Strain & Vib - T+247 - T+256 1024 sps



O = 21:26:09 = 77169 sec.

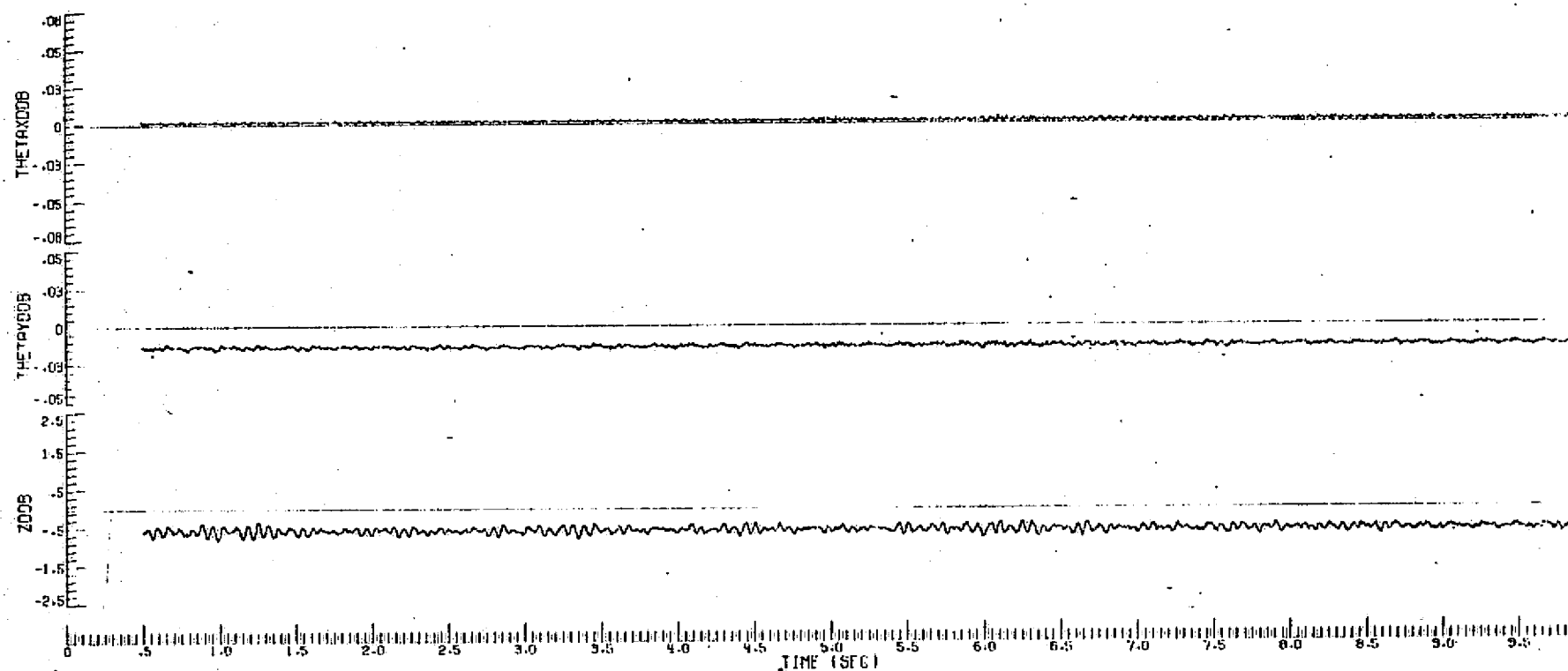
FIGURE 58. TC-4 FLMN-2 - Forces & Moments - T+249.5 - T+259.5 - 1024 sps

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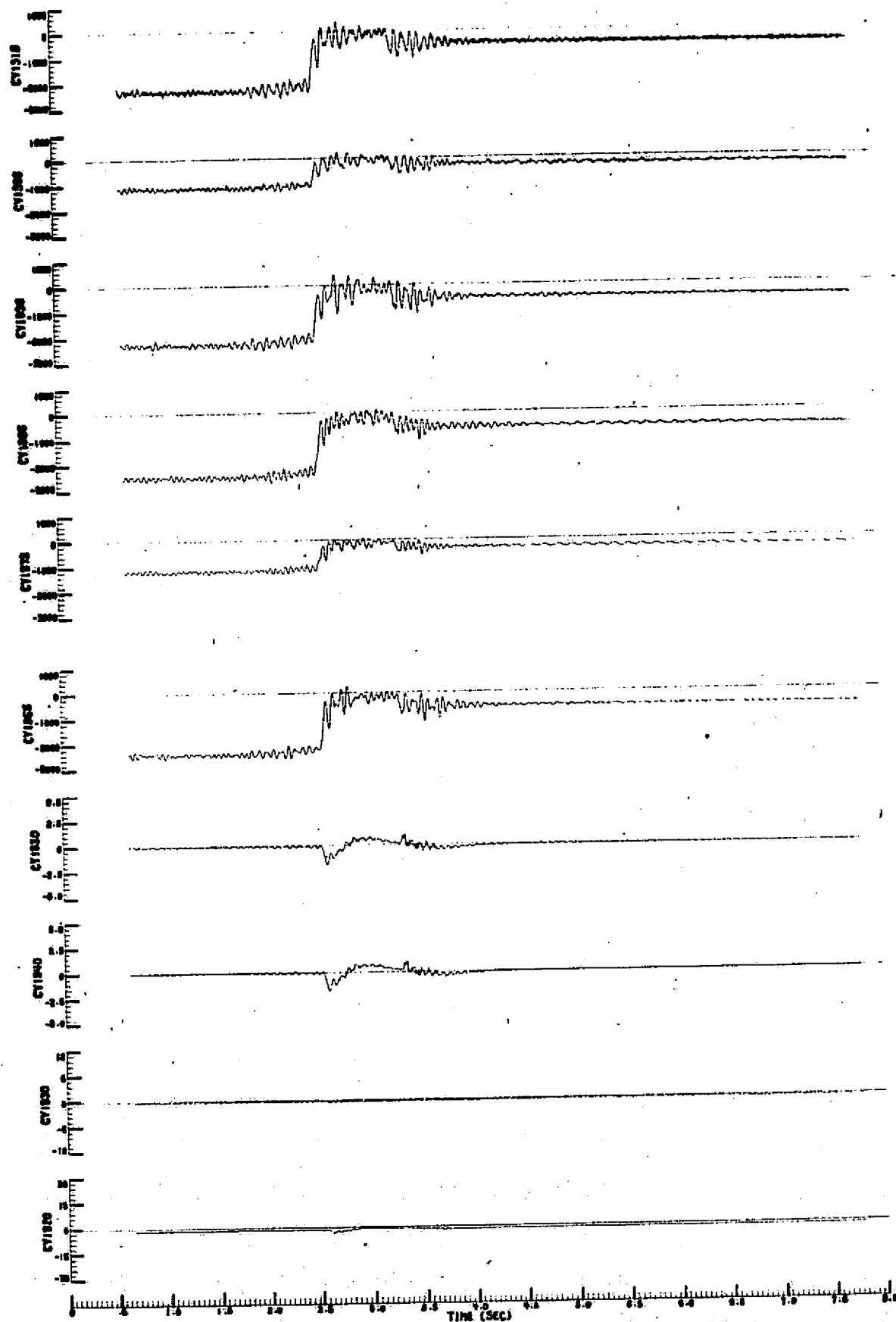
O = 21:26:09 #77169 sec.

FIGURE 59. TC-4 FLMN-2 - VLC cg Acceleration - T+249.5 - T+259.5 - 1024 sps.



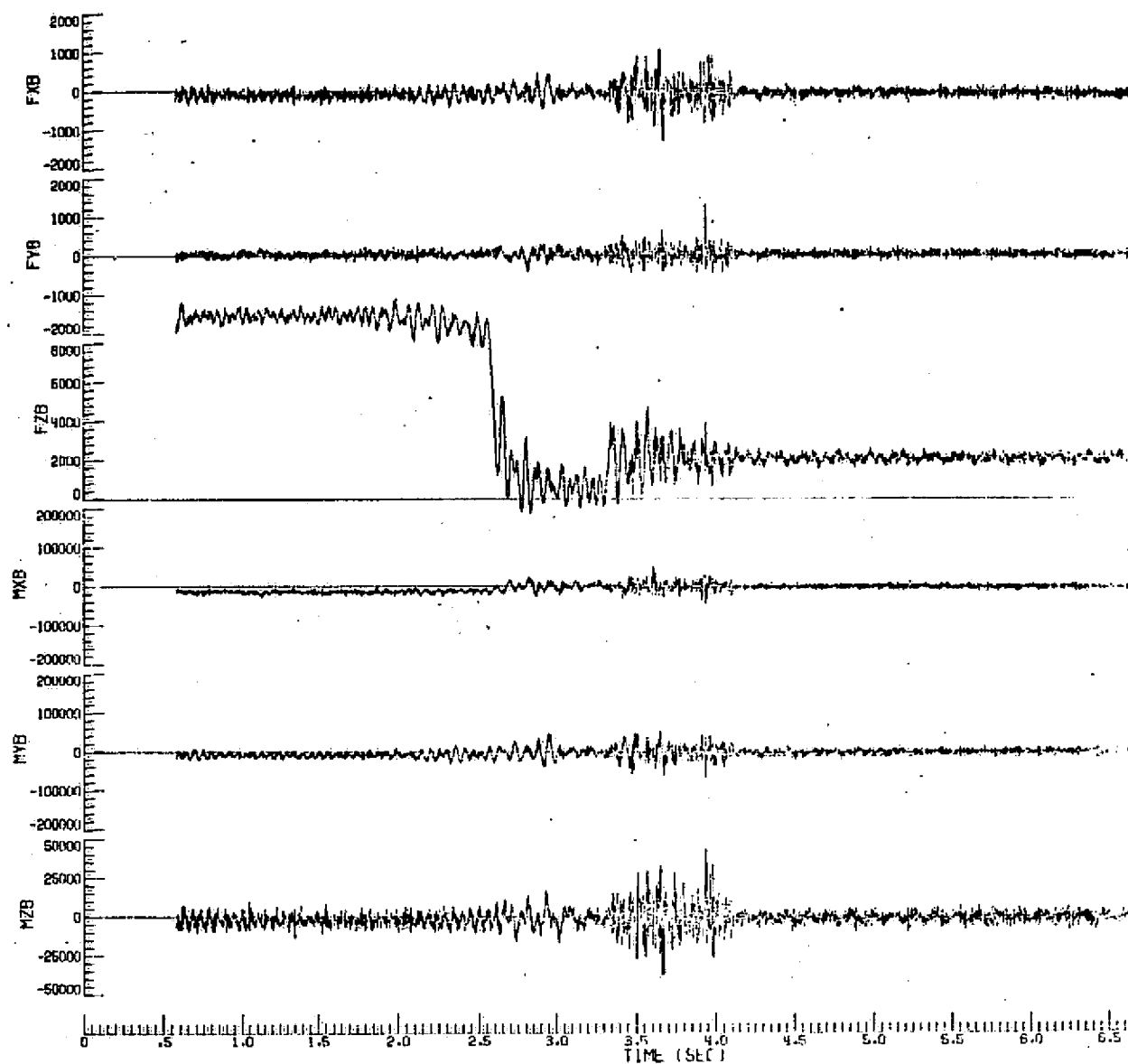
O = 21:26:09 = 77169 sec.

FIGURE 60. TC-4 FLMN-2 - Bus Acceleration - T+249.5 - T+259.5 - 1024 sps



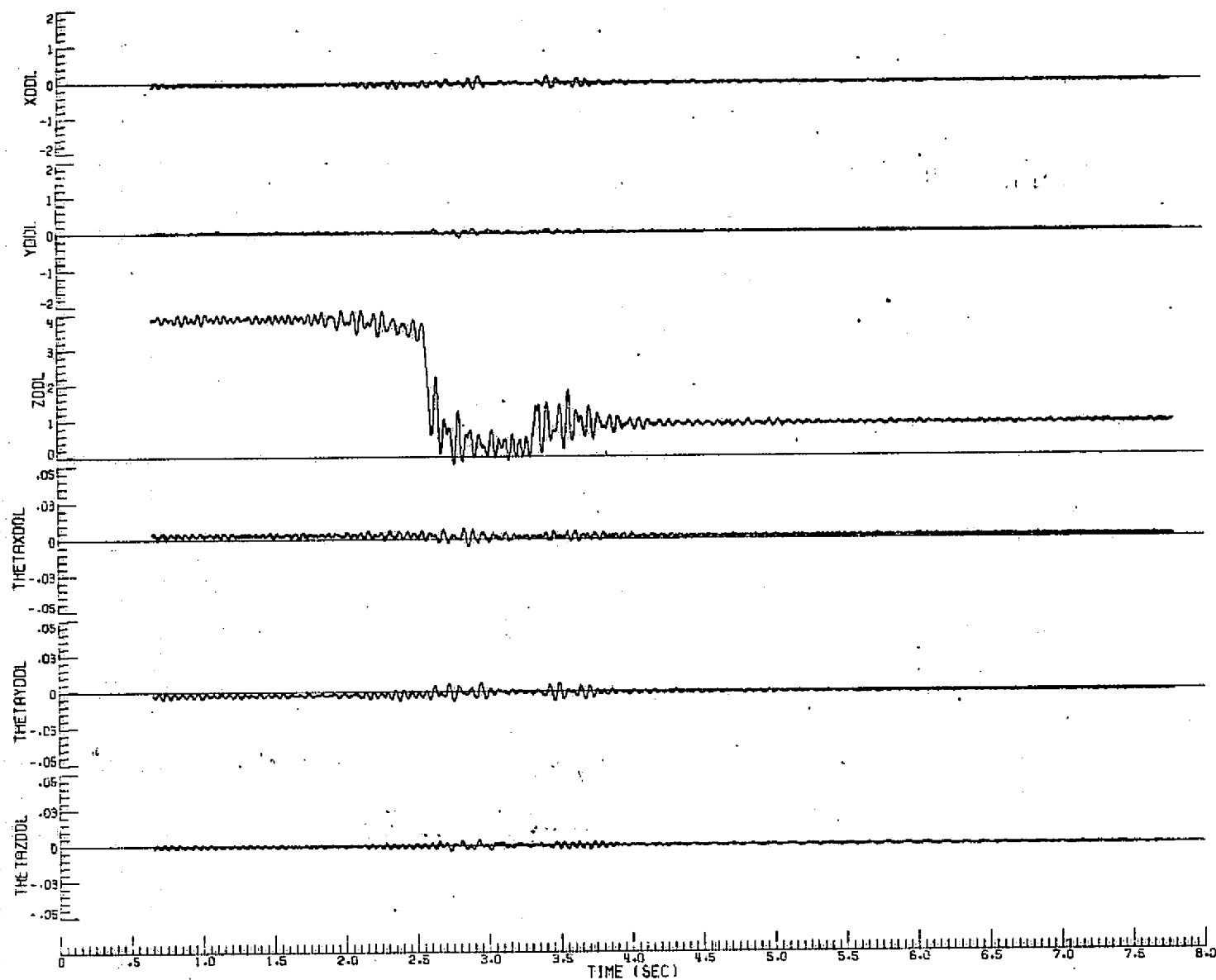
O = 21:26:17 = 77177 sec.

FIGURE 61. TC-4 - Stage 1 Burnout - Strain & Vibration - 1024 sps



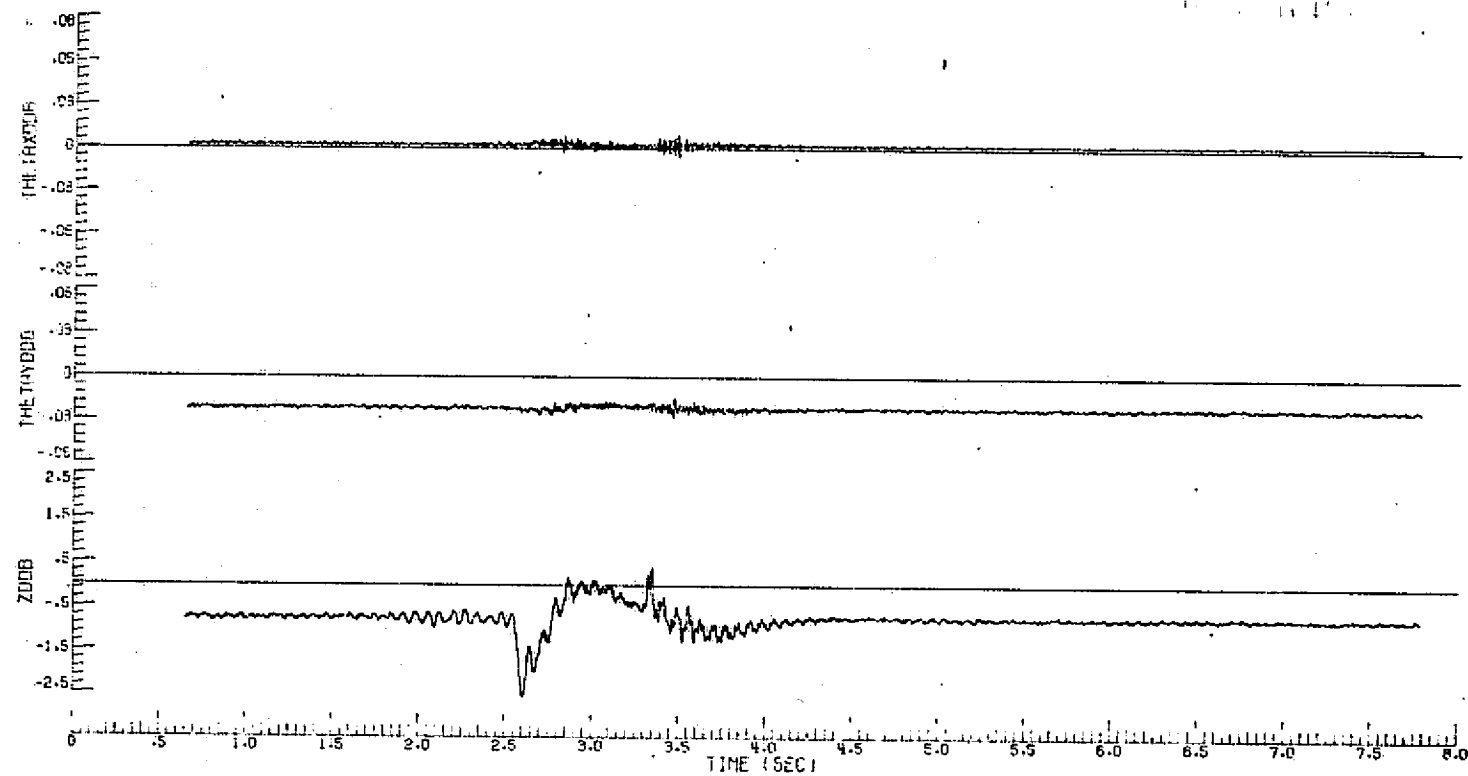
O = 21:26:17 = 77177 sec.

FIGURE 62. TC-4 - Stage I Burnout - Forces & Moments - 1024 sps



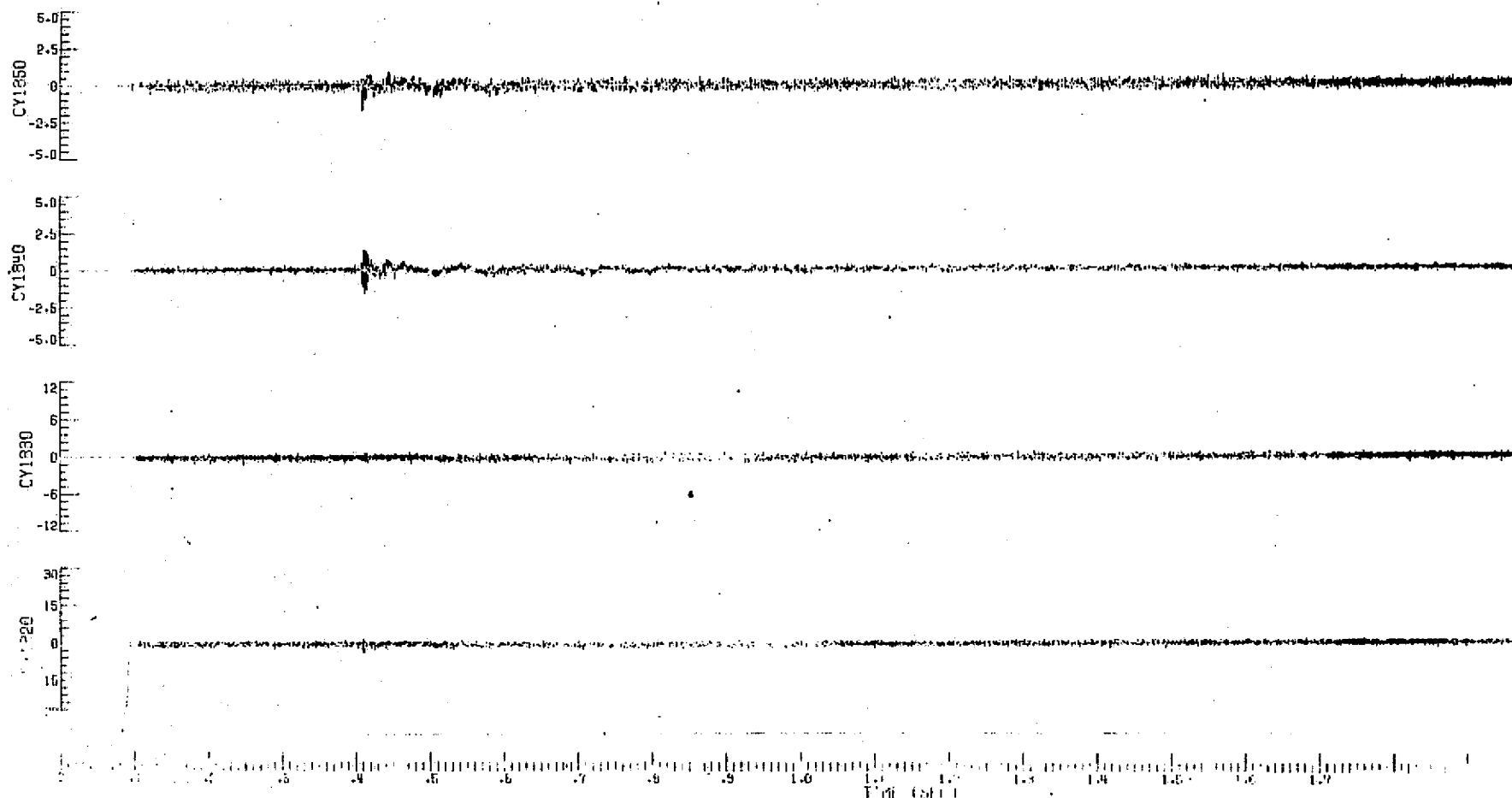
O = 21:26:17 = 77177 sec.

FIGURE 63. TC-4 Stage 1 Burnout - VLC cg Acceleration - 1024 sps



O = 21:26:17 = 77177 sec.

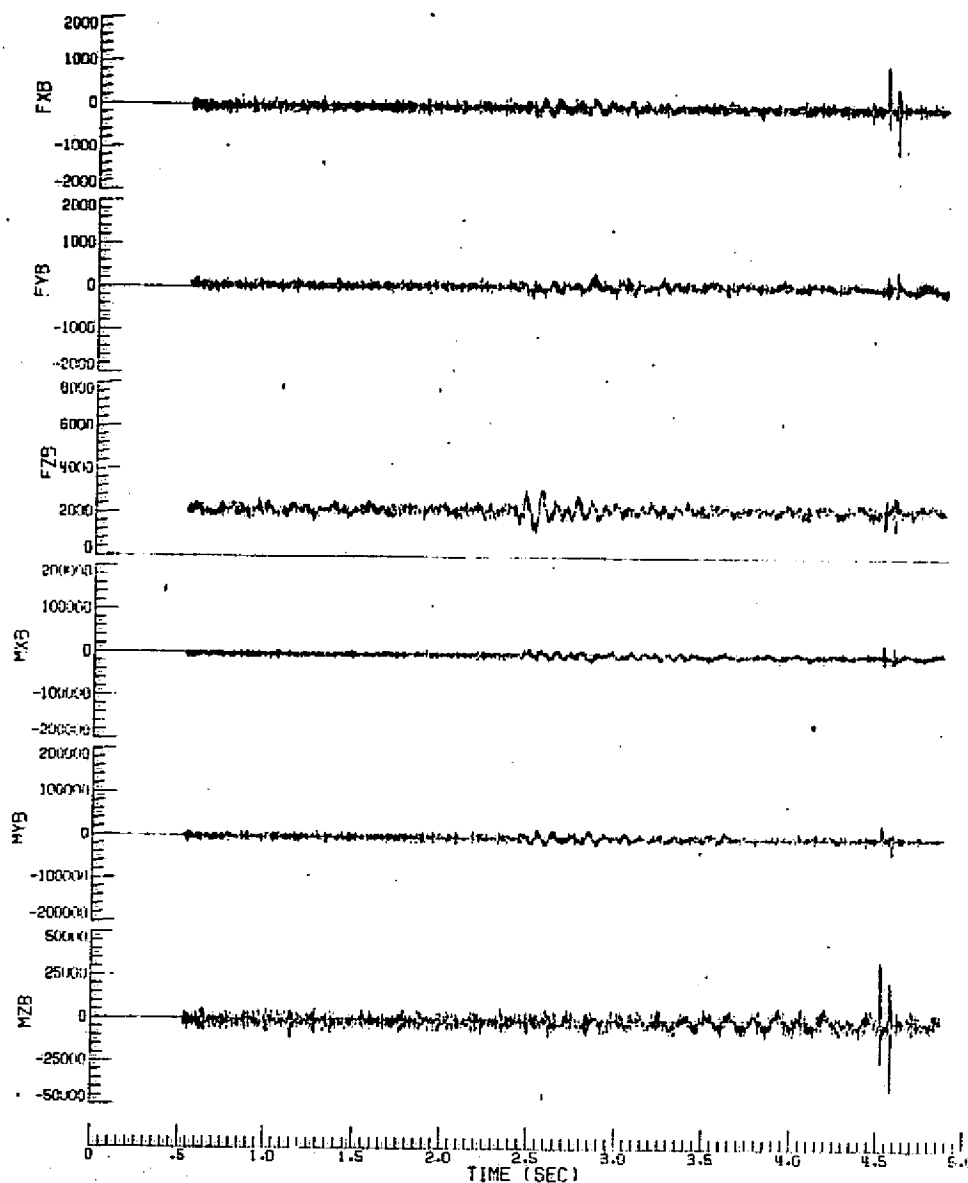
FIGURE 64. TC-4 Stage I Burnout - Bus Acceleration - 1024 sps



O = 21:26:30 = 77190 sec.

FIGURE 65. TC-4 Jettison Shroud - Vibration Sensors - 4096 sps

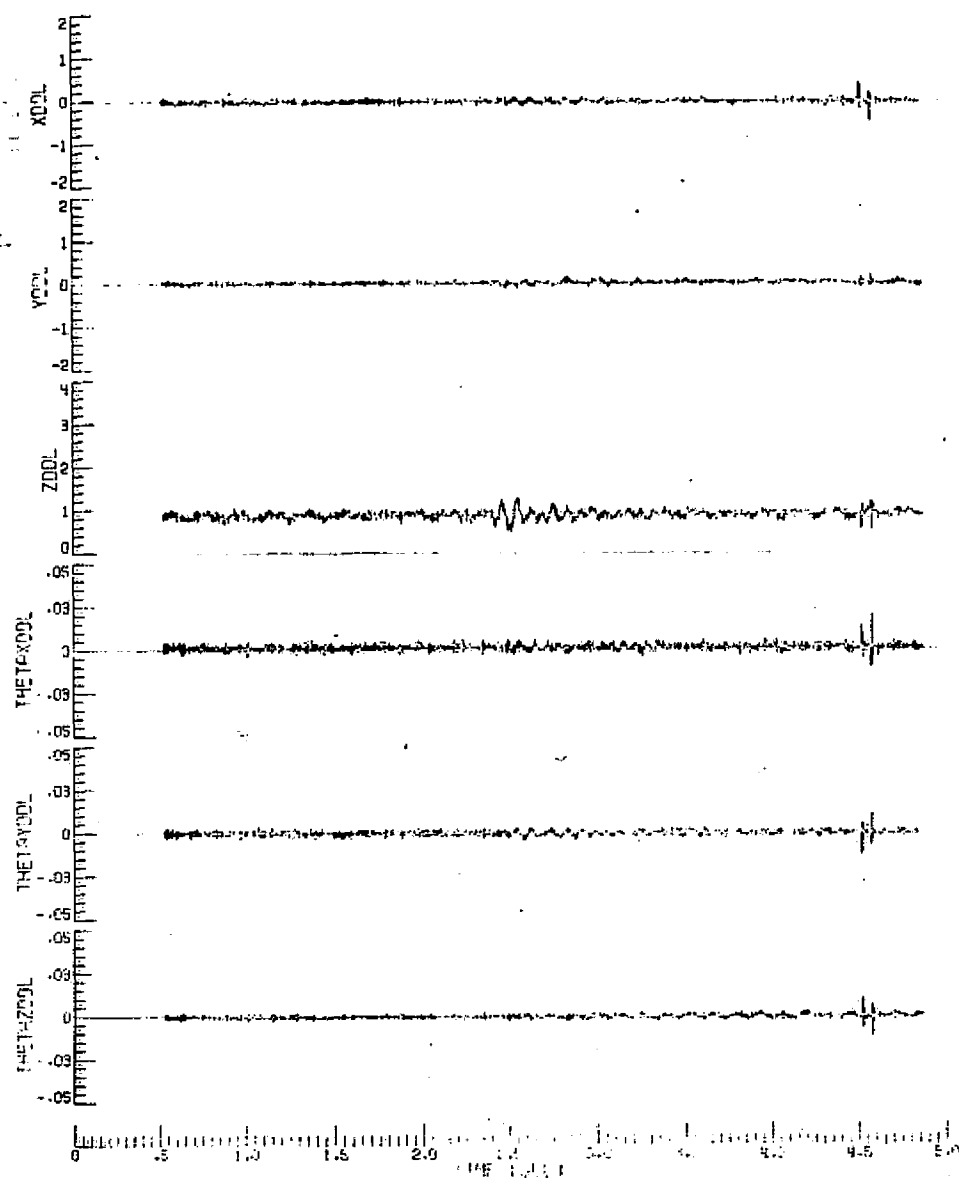
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O = 21:26:28 = 77188 sec.

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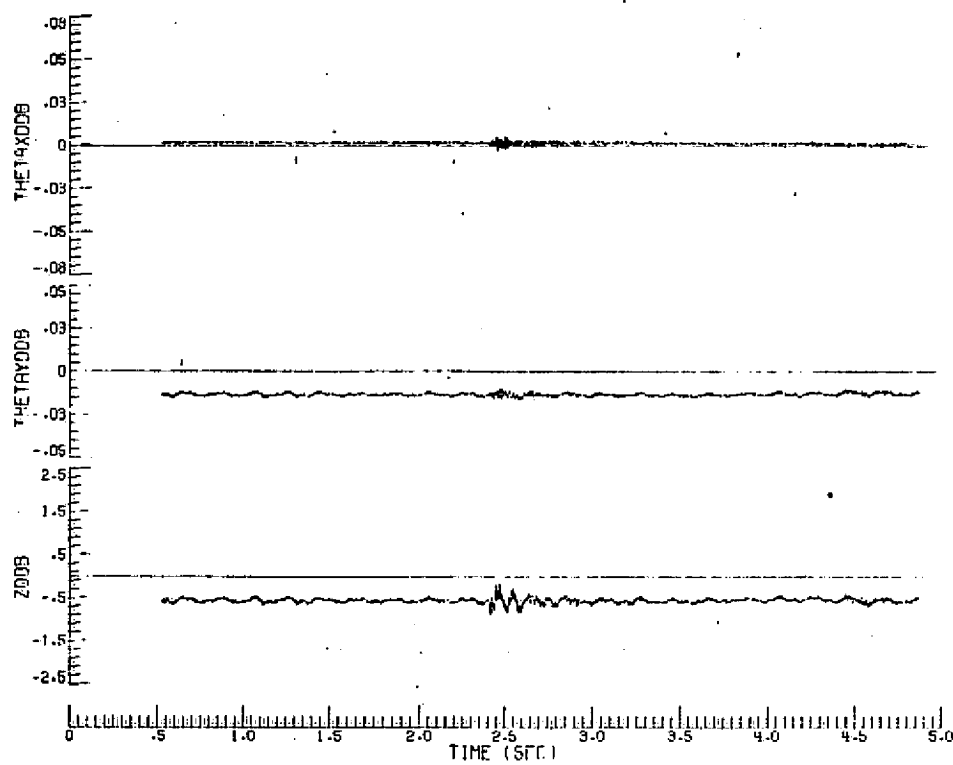
FIGURE 66. TC-4 Jettison Shroud - Force & Moments - 1024 sps



O = 21:26:28 = 77188 sec.

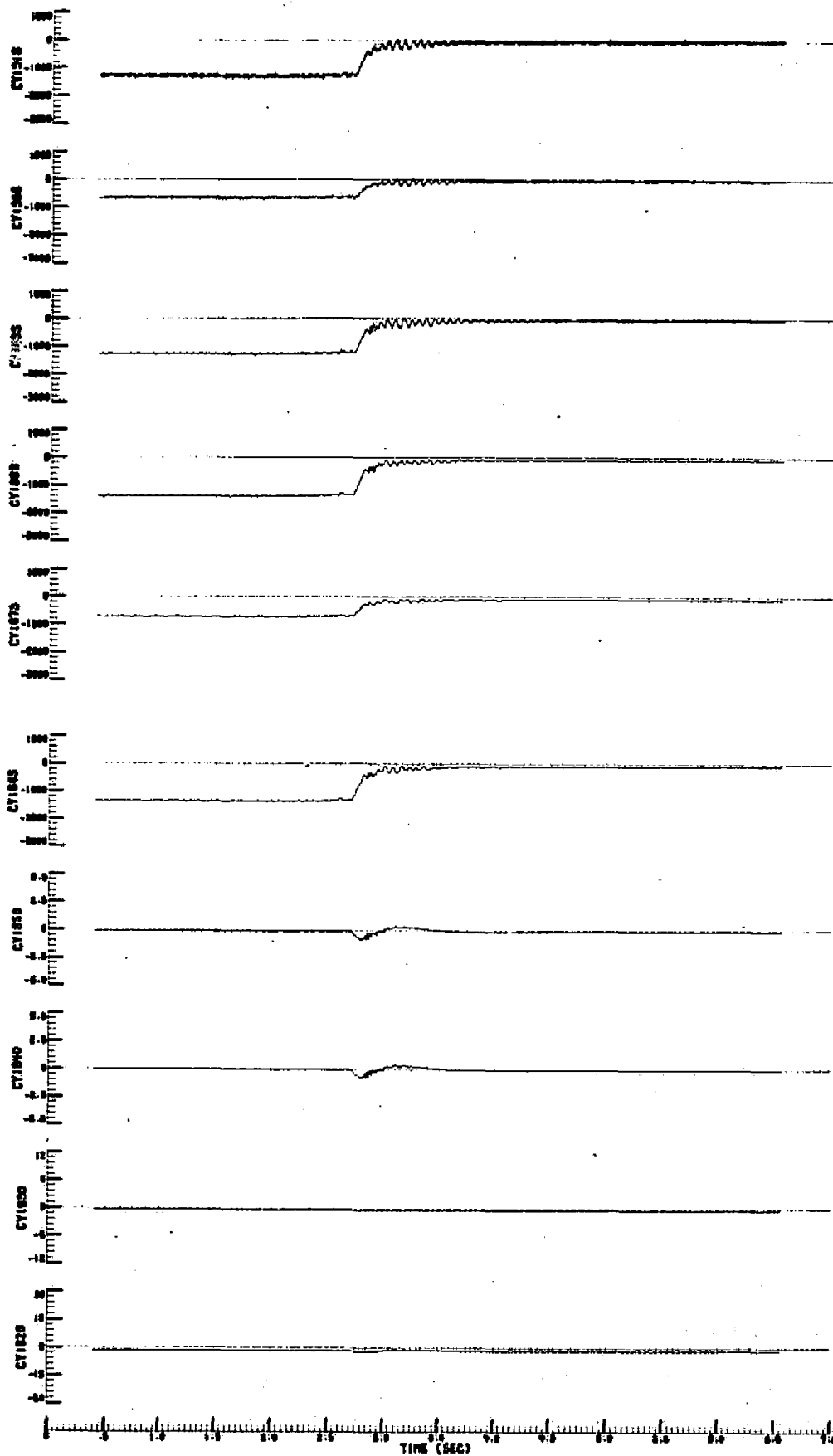
FIGURE 67. TC-4 Jettison Shroud - VLC cg Acceleration - 1024 sps

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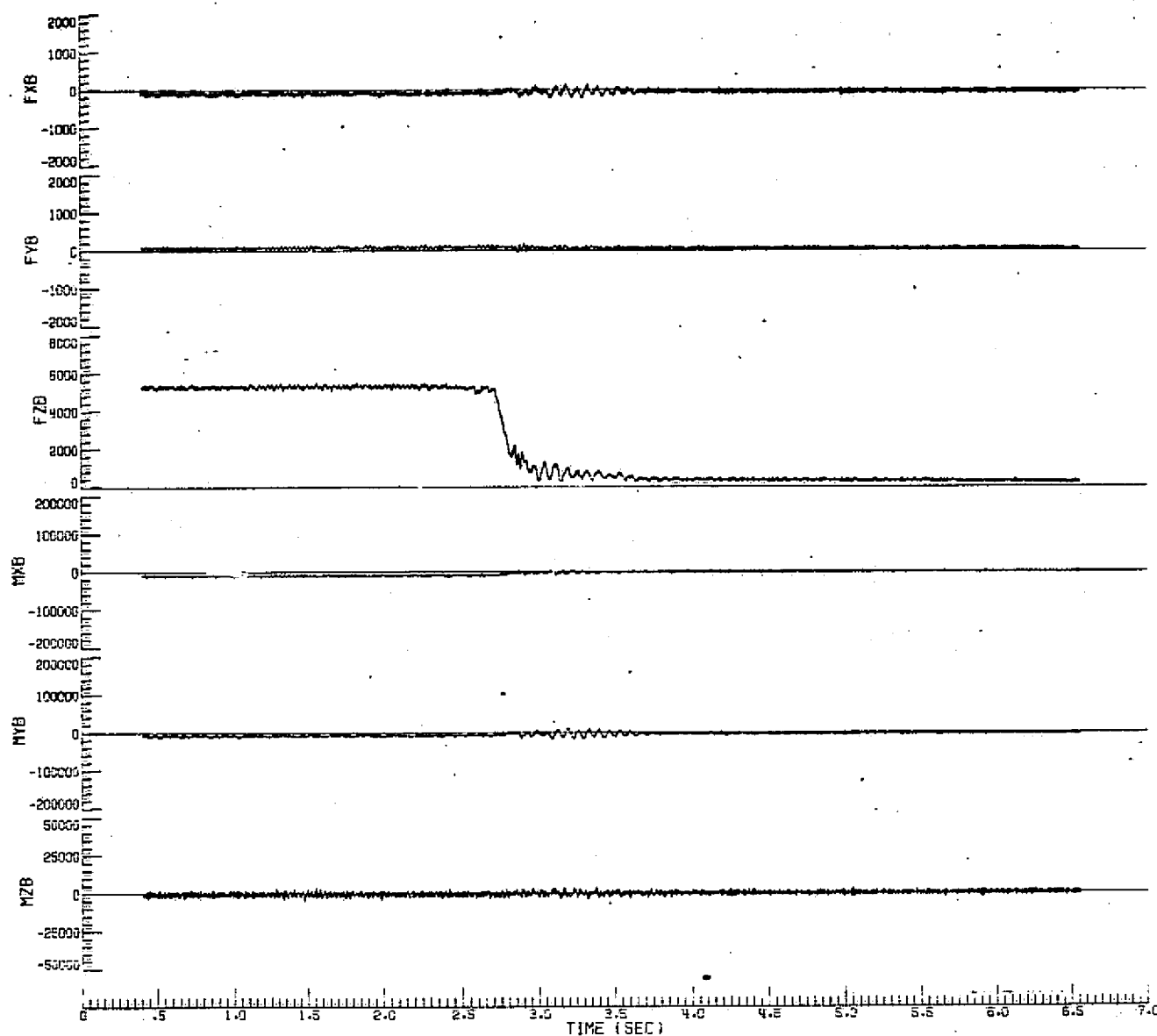
O = 21:26:28 = 77188 sec.

FIGURE 68. TC-4 Jettison Shroud - Bus Acceleration - 1024 sps



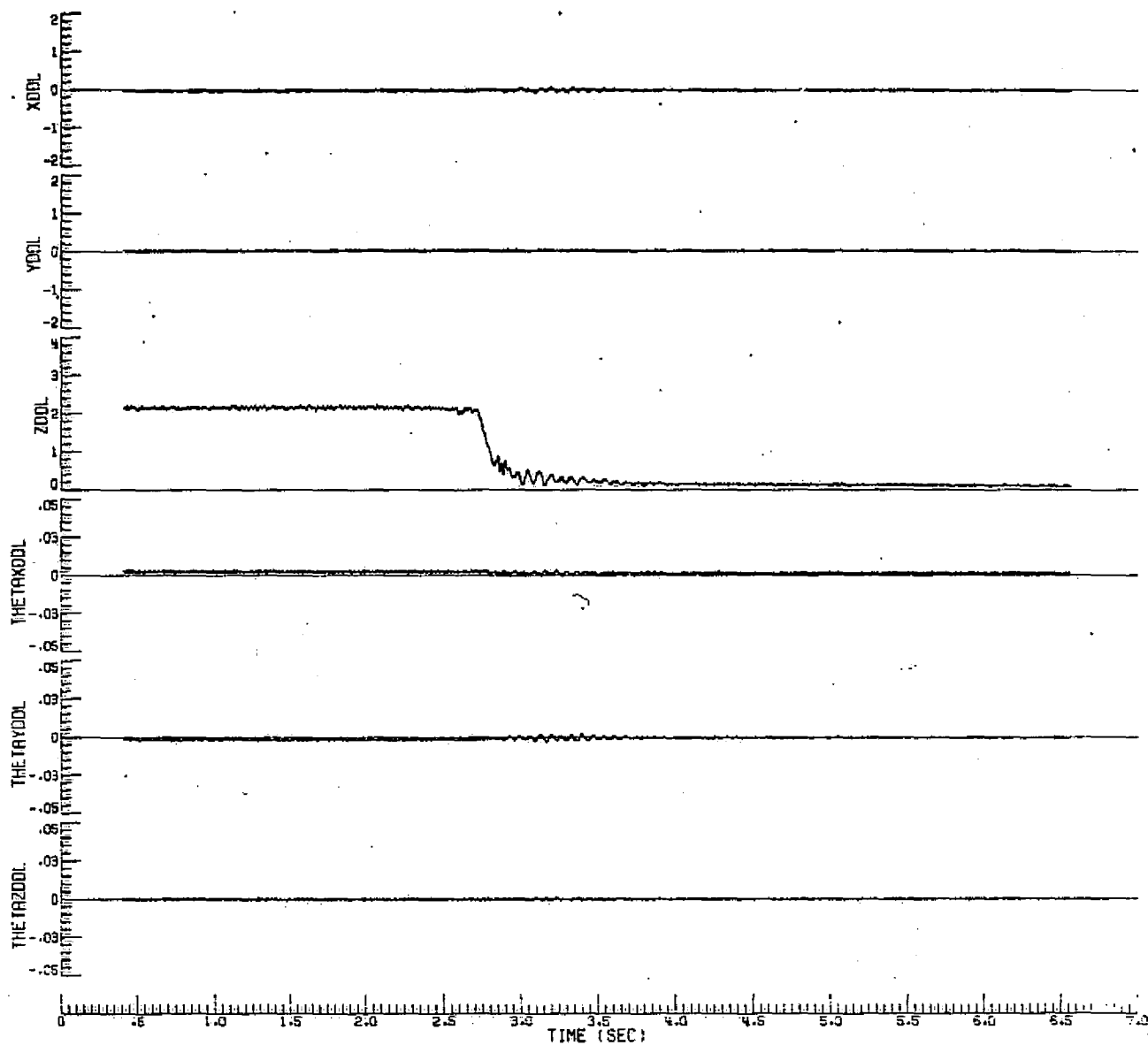
O = 21:23:45 = 77385 sec.

FIGURE 69. TC-4 Stage 2 Burnout - Strains & Vibrations - 1024 sps



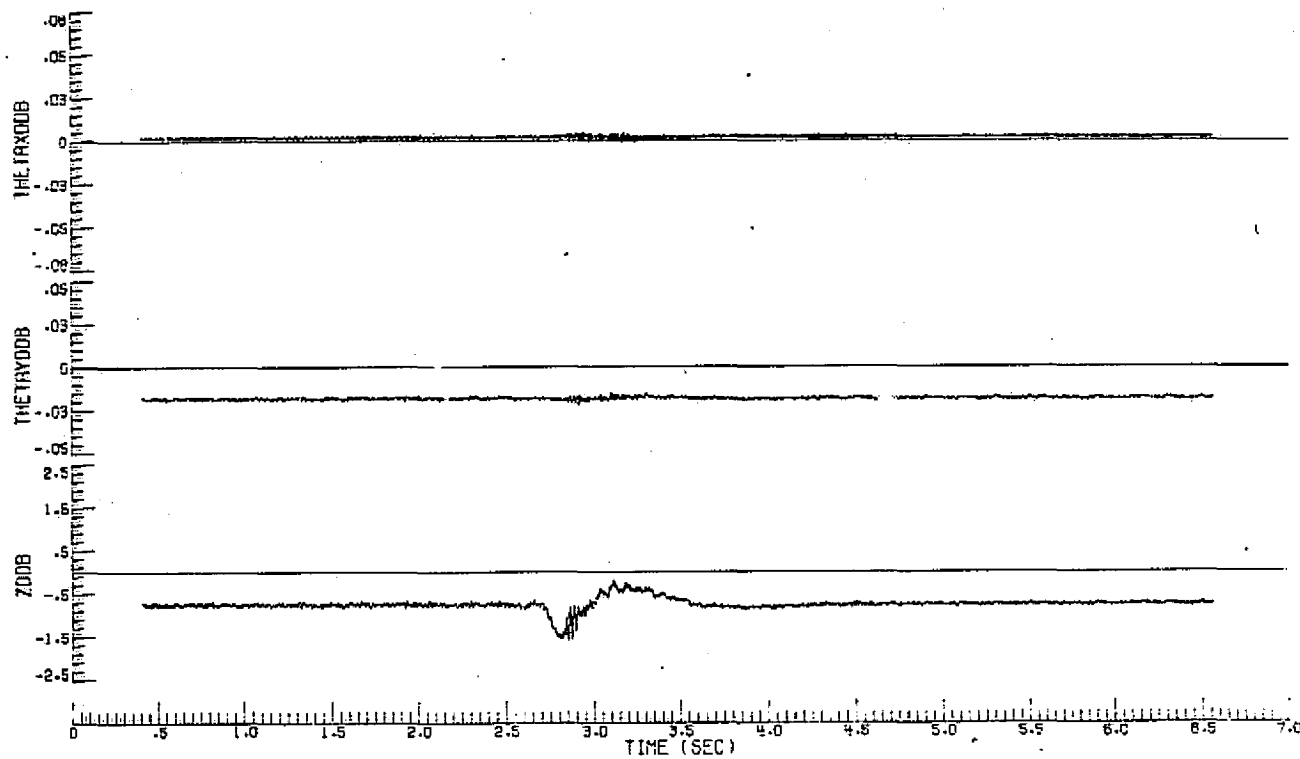
O = 21:29:45 = 77385 sec.

FIGURE 70. TC-4 Stage 2 Burnout - Forces & Moments - 1024 sps



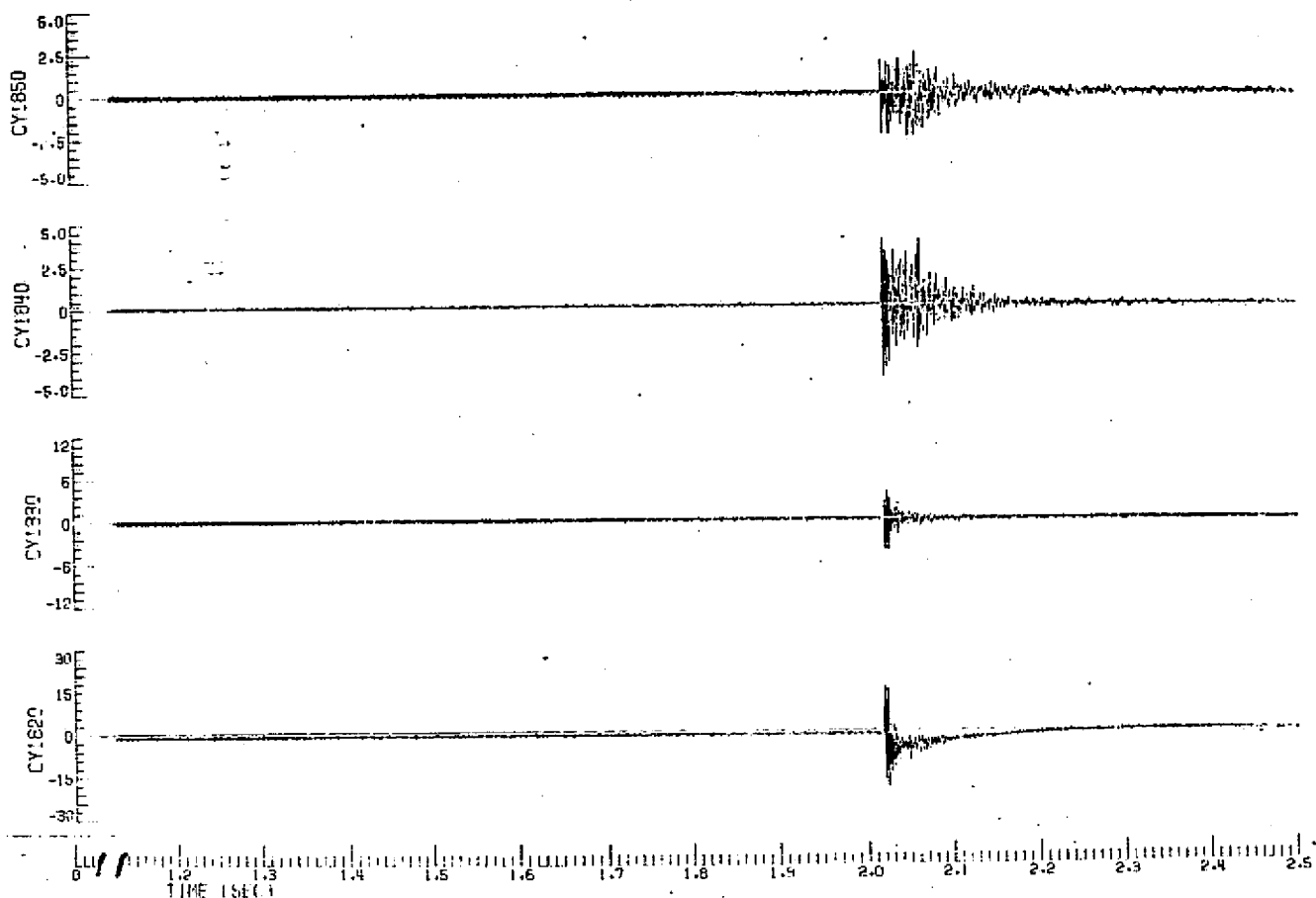
O = 21:29:45 = 77385 sec.

FIGURE 71. TC-4 Stage 2 Burnout - VLC cg Acceleration - 1024 sps



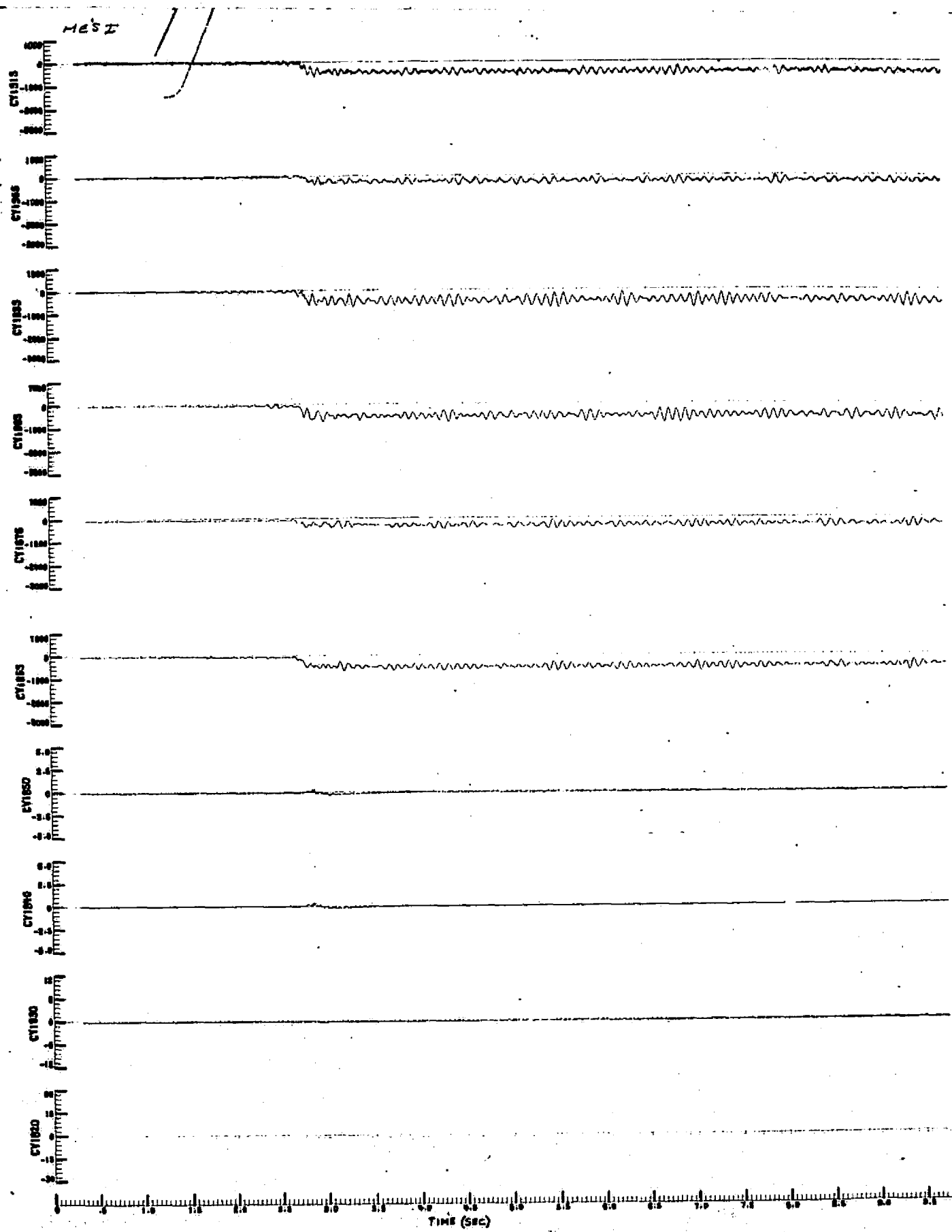
O = 21:29:45 = 77385 sec.

FIGURE 72. TC-4 Stage 2 Burnout - Bus Acceleration - 1024 sps



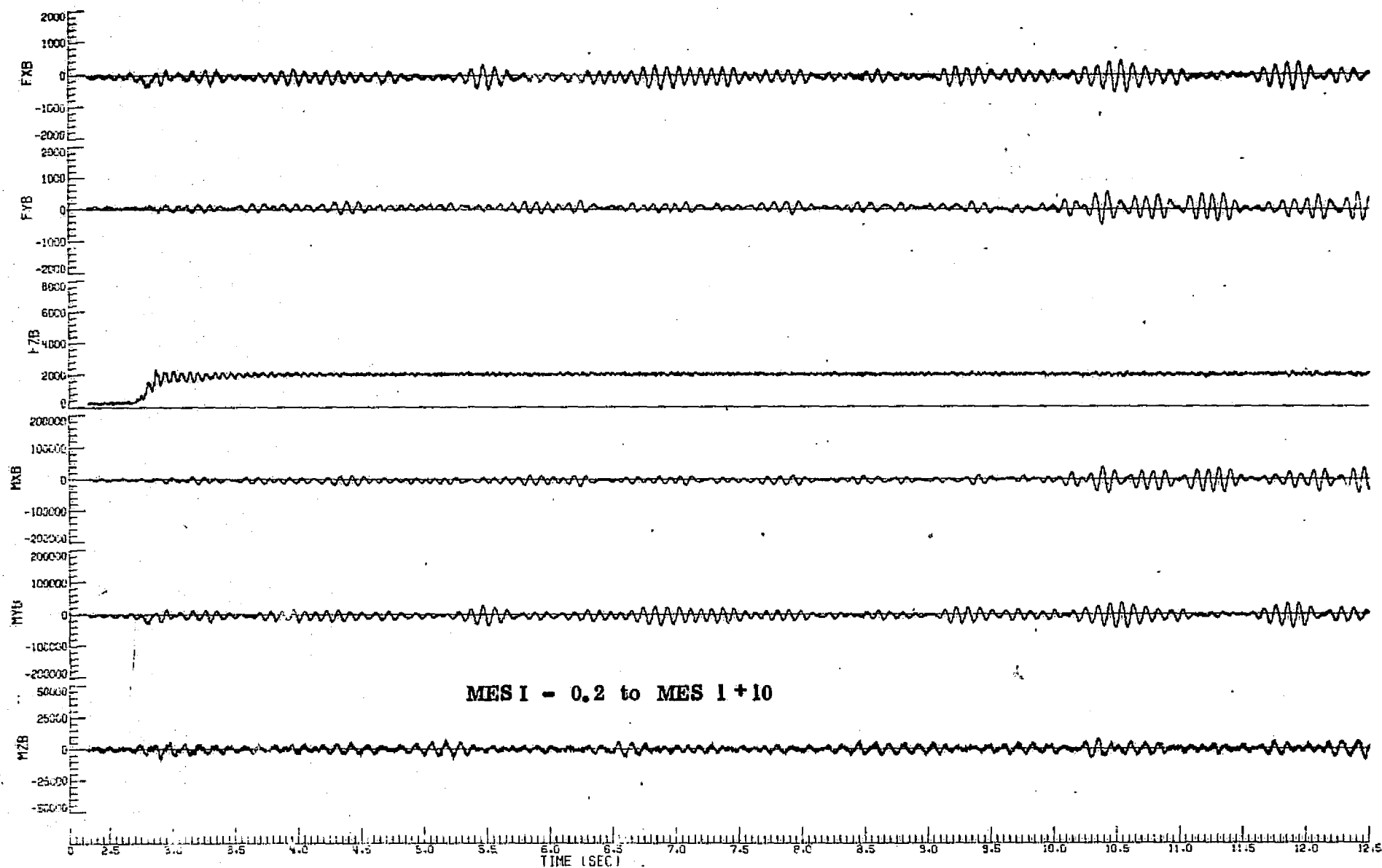
O = 21:29:52 = 77392 sec.

FIGURE 73. TC-4 Titan/Centaur Separation - Vibration Sensors - 4096 sps



O = 21:30:03 = 77403 sec.

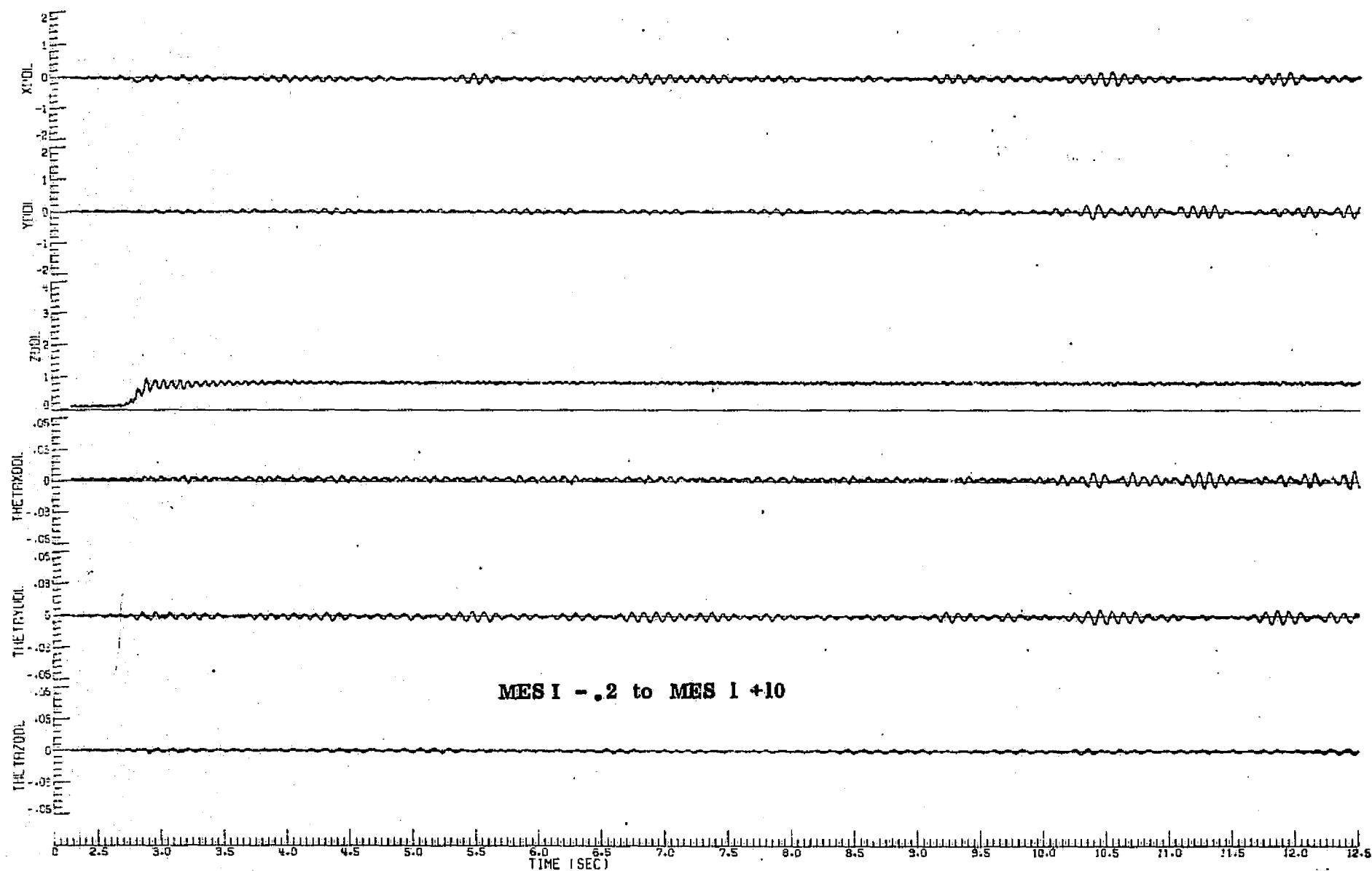
FIGURE 74. TC-4 MES I - Strain & Vibration



MES I - 0.2 to MES I +10

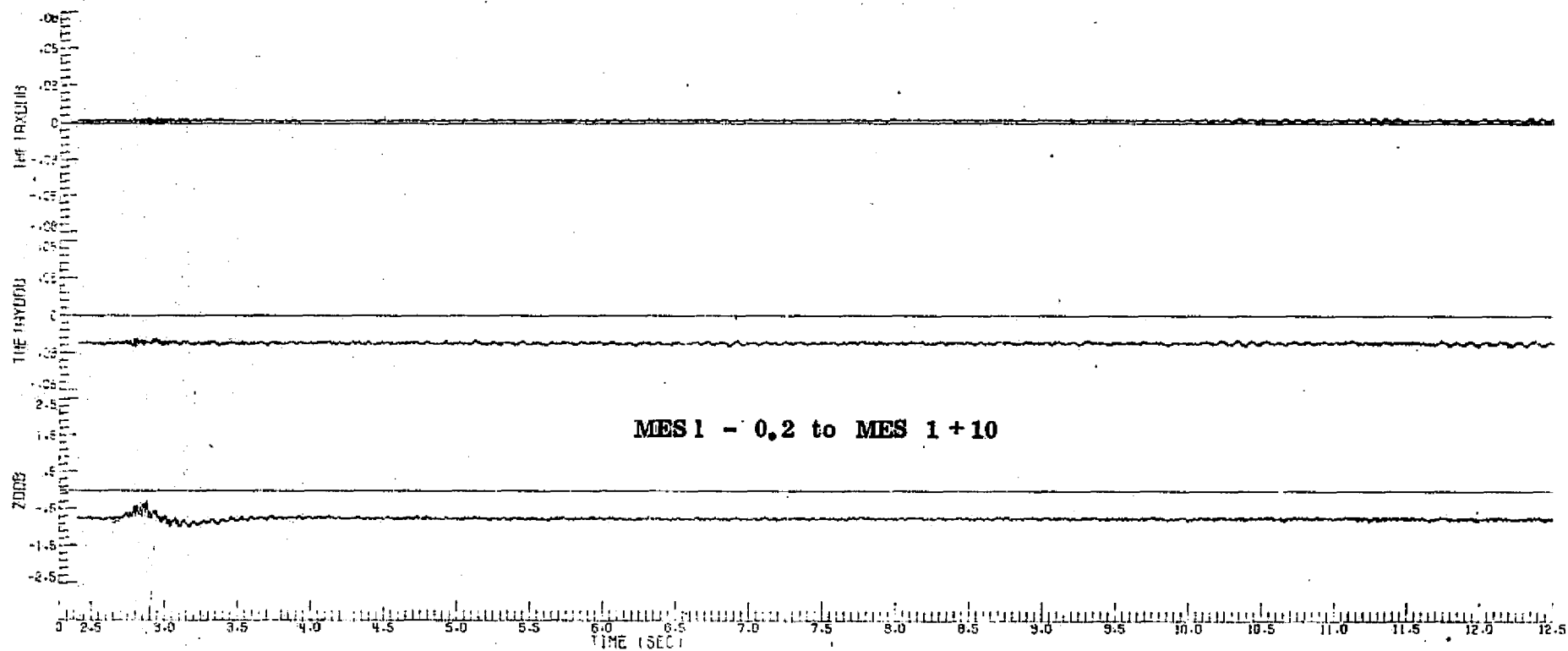
O = 21:30:03 = 77405 sec.

FIGURE 75. TC-4 MES I - Forces & Moments - 1024 sps



O = 21:30:03 = 77403 sec.

FIGURE 76. TC-4 MES I VLC cg Accelerations - 1024 sps



O = 21:30:03 = 77403 sec.

FIGURE 77.

TC-4

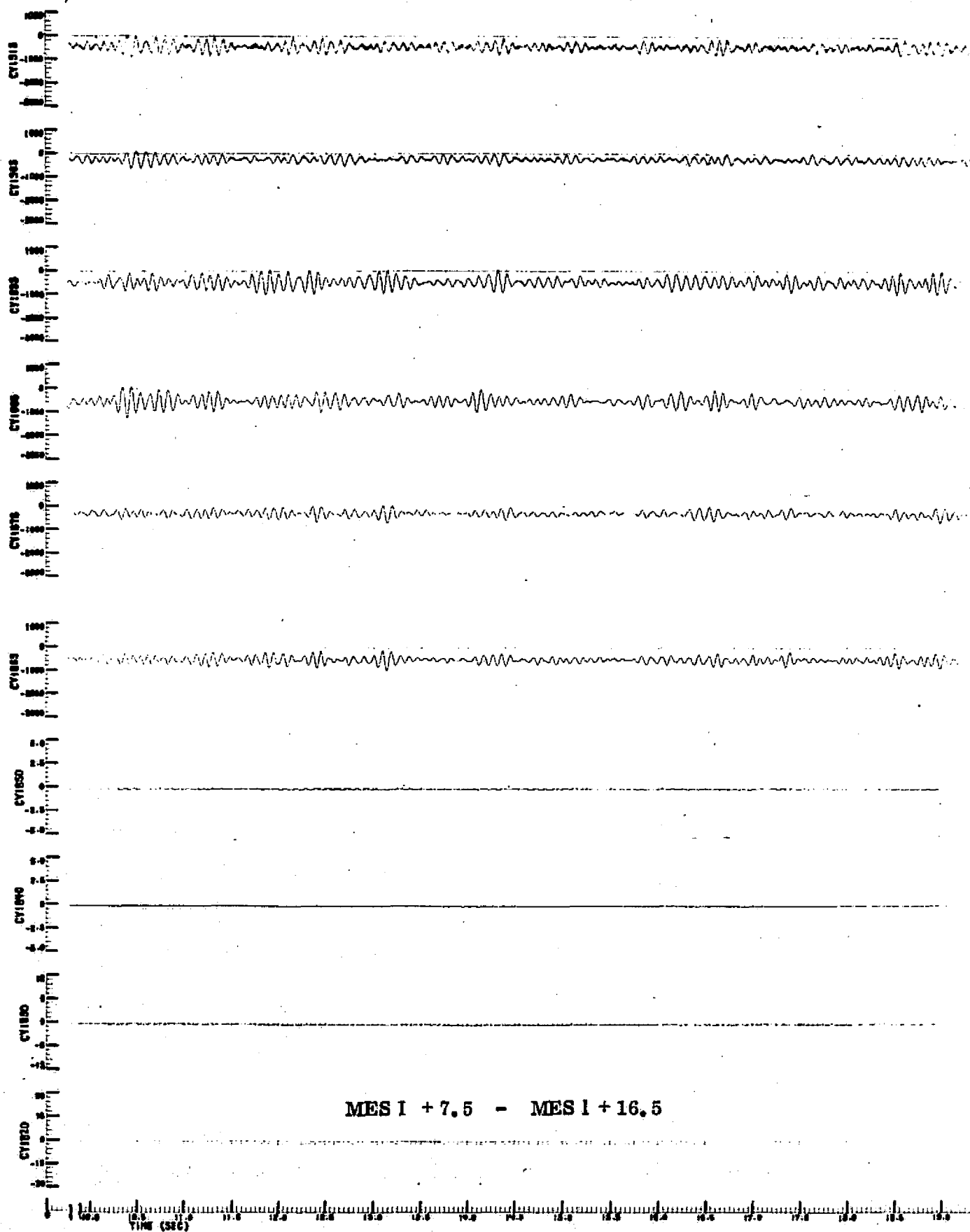
MES I

-

Bus Acceleration

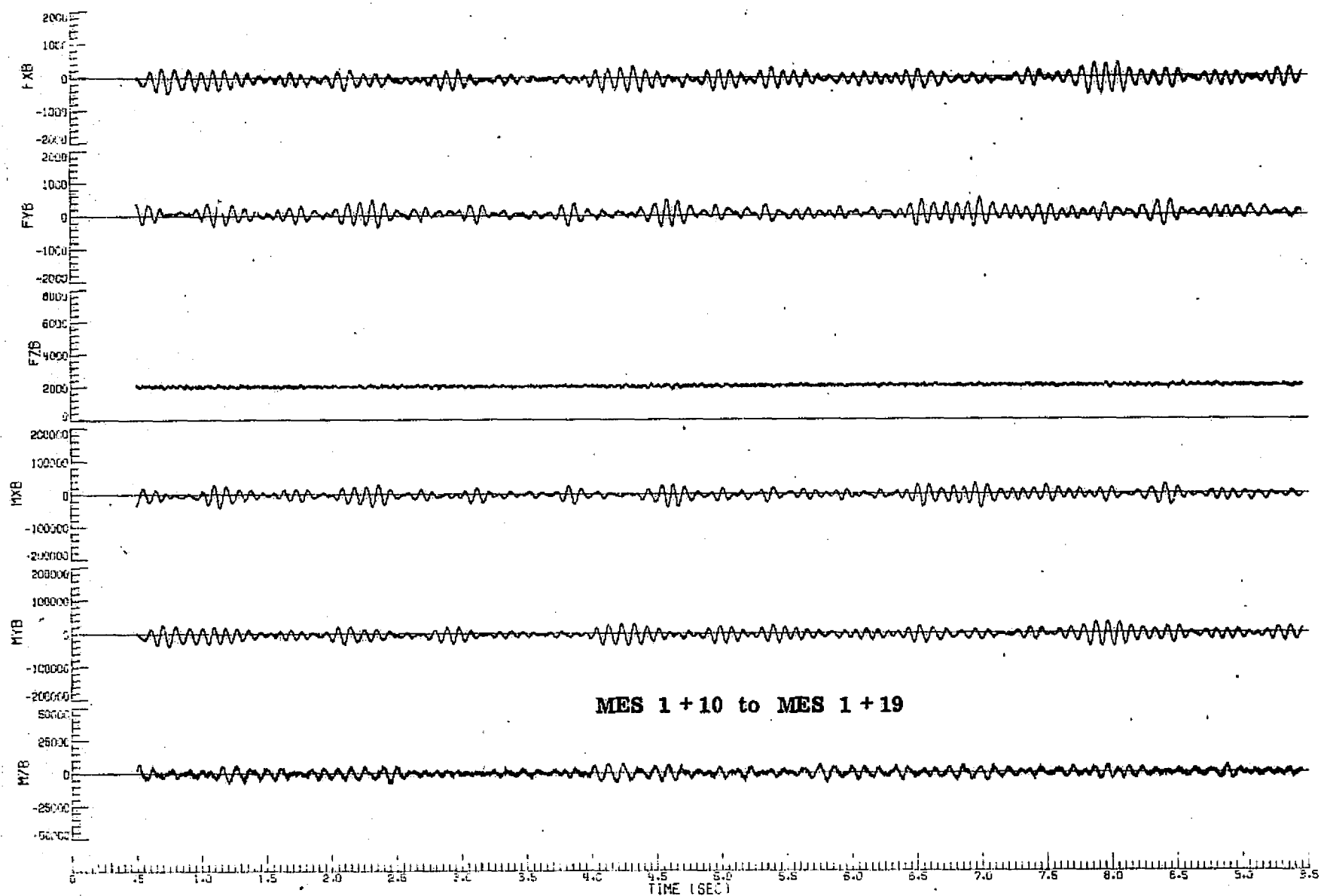
-

1024 sps



O = 21:30:03 = 77403 sec.

FIGURE 78. TC-4 Centaur First Burn - Strain & Vibration



O - 21:30:15 = 77415 sec.

FIGURE 79.

TC-4

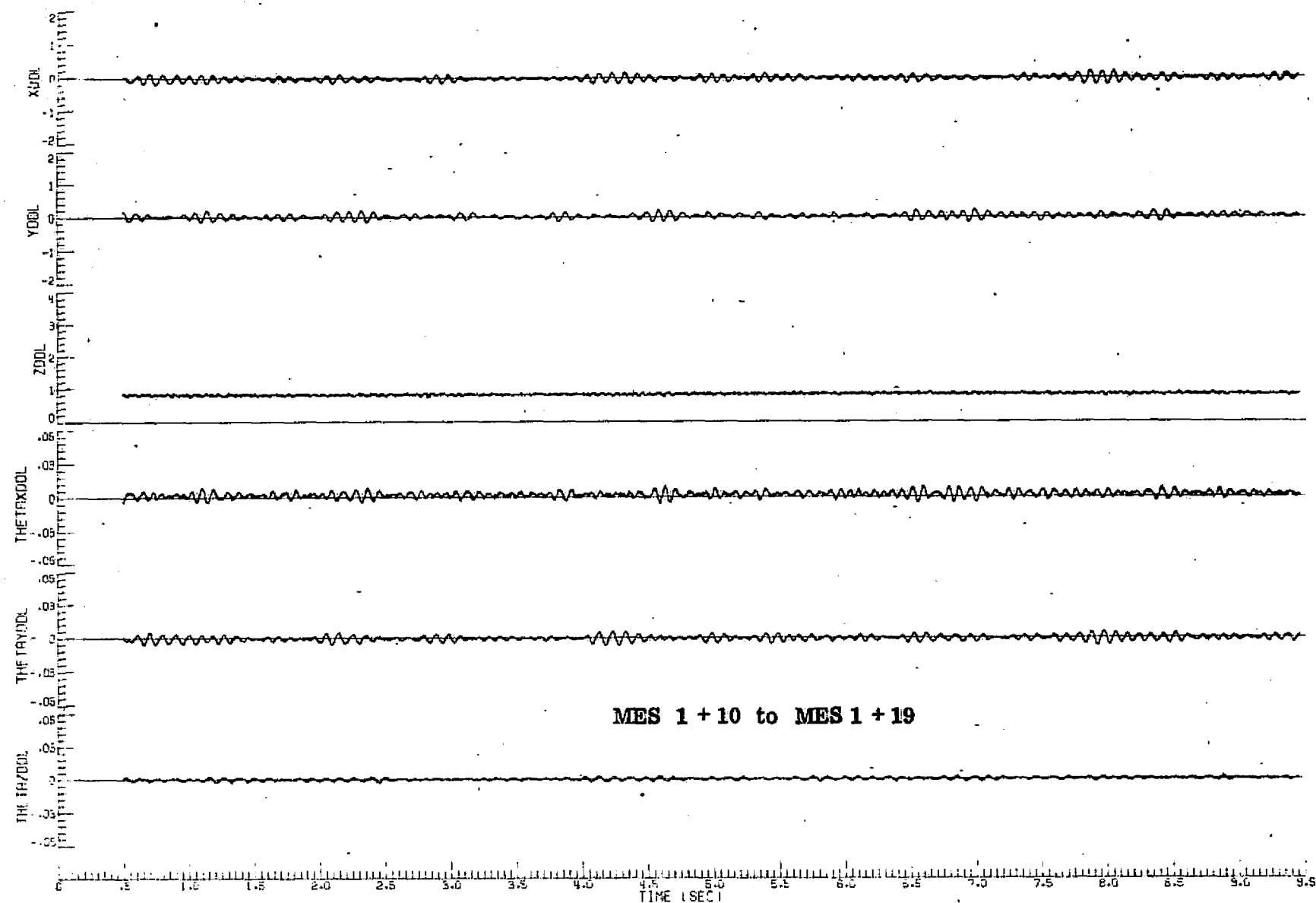
MES I

-

Forces & Moments

-

1024 sps



O = 21:30:15 = 77415 sec.

FIGURE 80.

TC-4

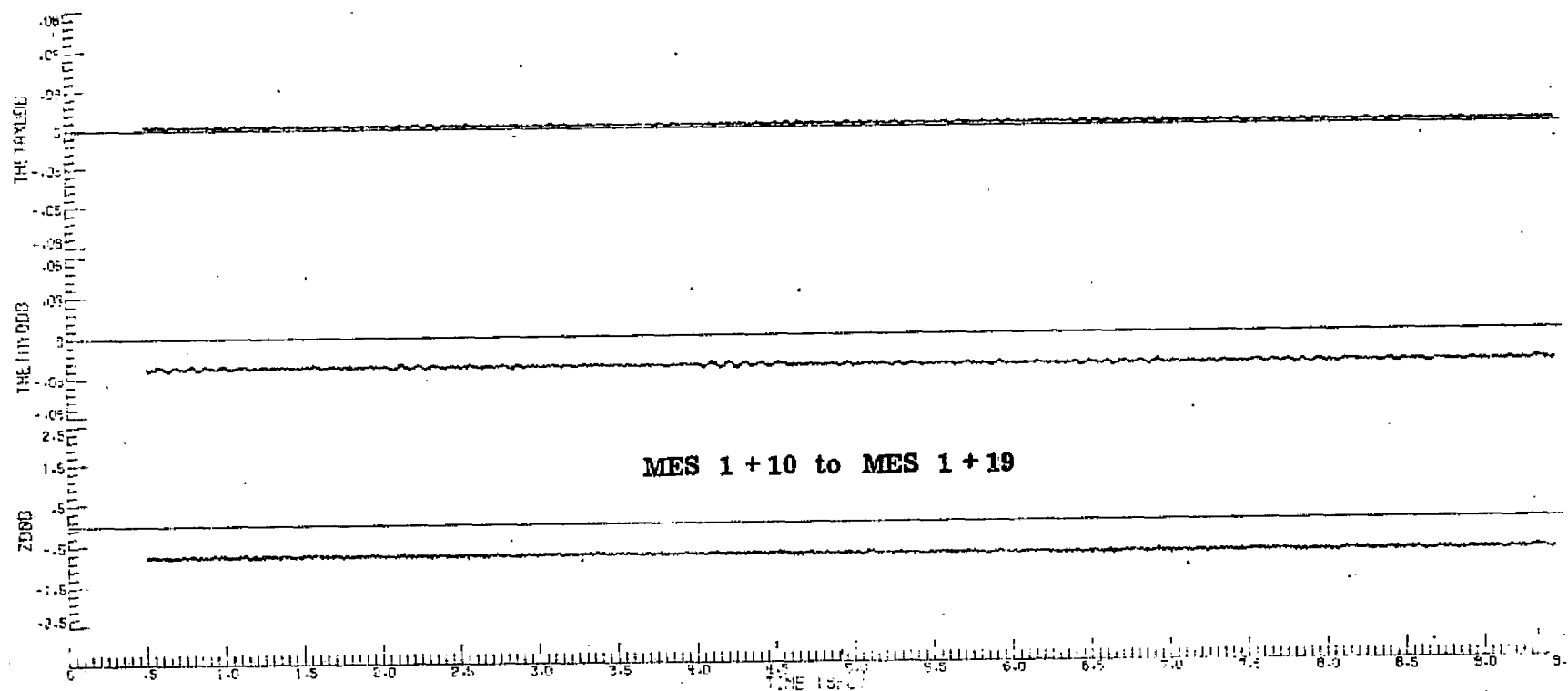
MES I

-

VLC cg Accelerations

-

1024 sps



O = 21:30:15 = 77415 sec.

FIGURE 81.

TC-4

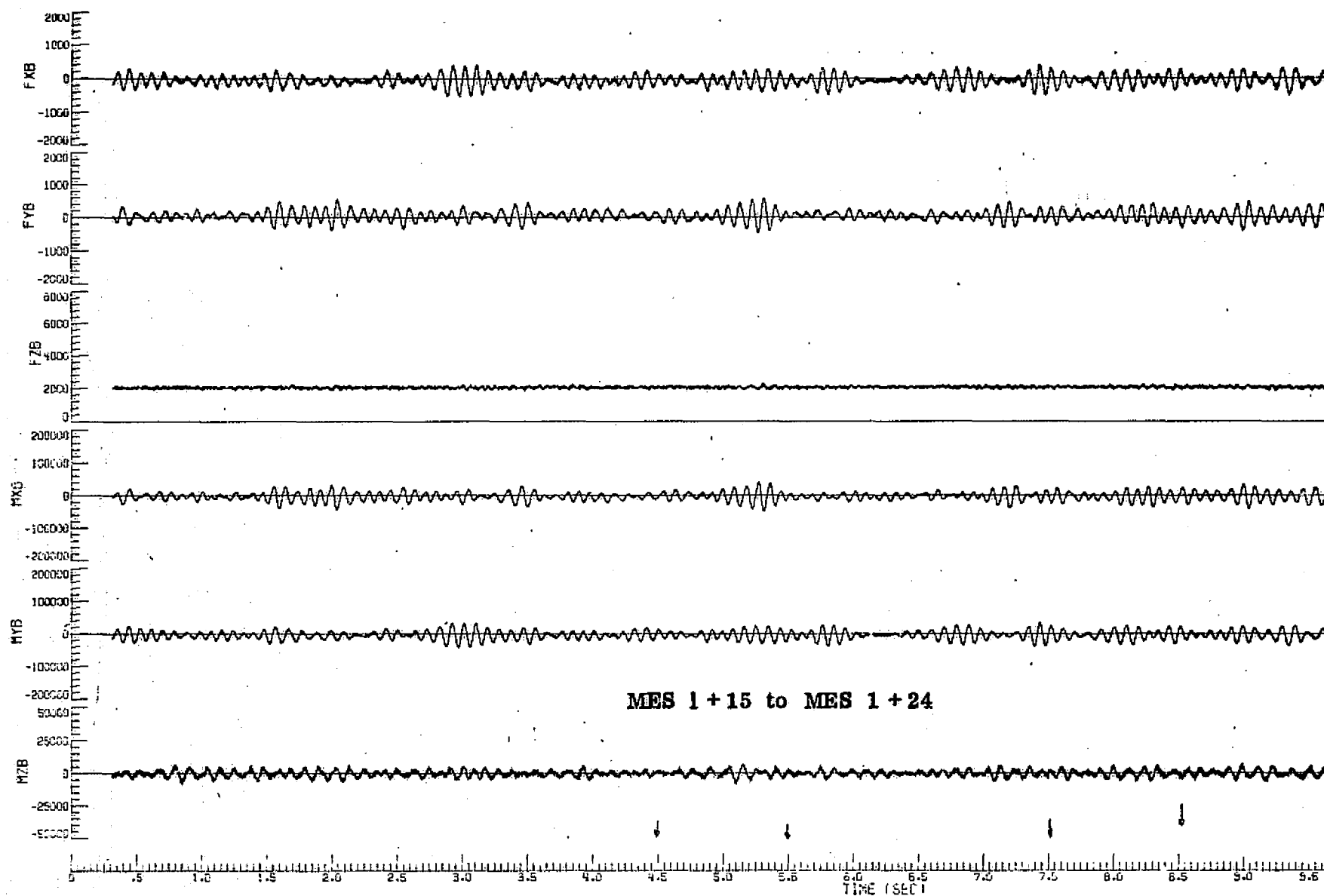
MES I

-

Bus Accelerations

-

1024 sps



O = 21:30:20 = 77420 sec.

FIGURE 83.

TC-4

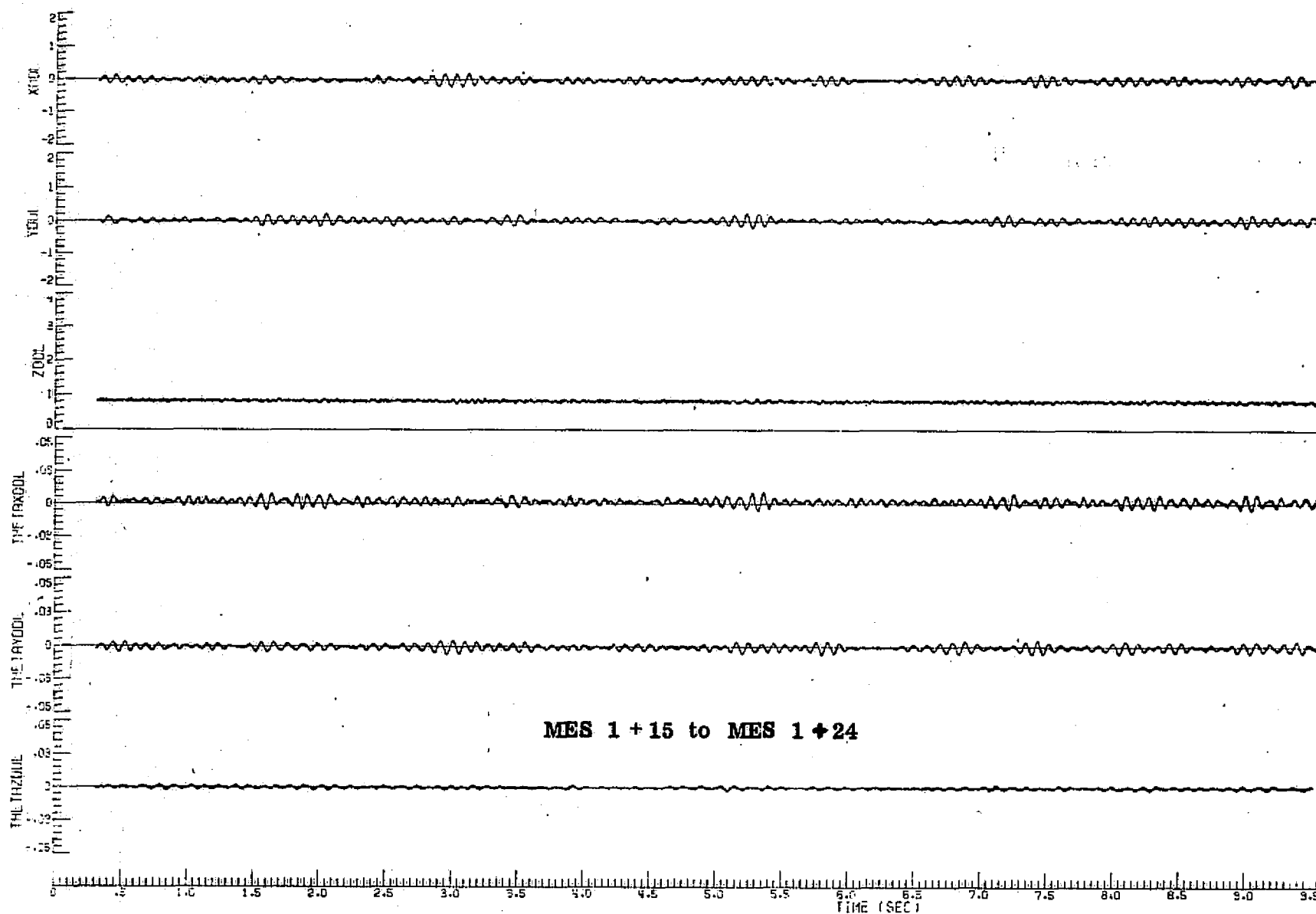
Centaur First Burn

-

Forces & Moments

-

1024 sps



O = 21:30:20 = 77420 sec.

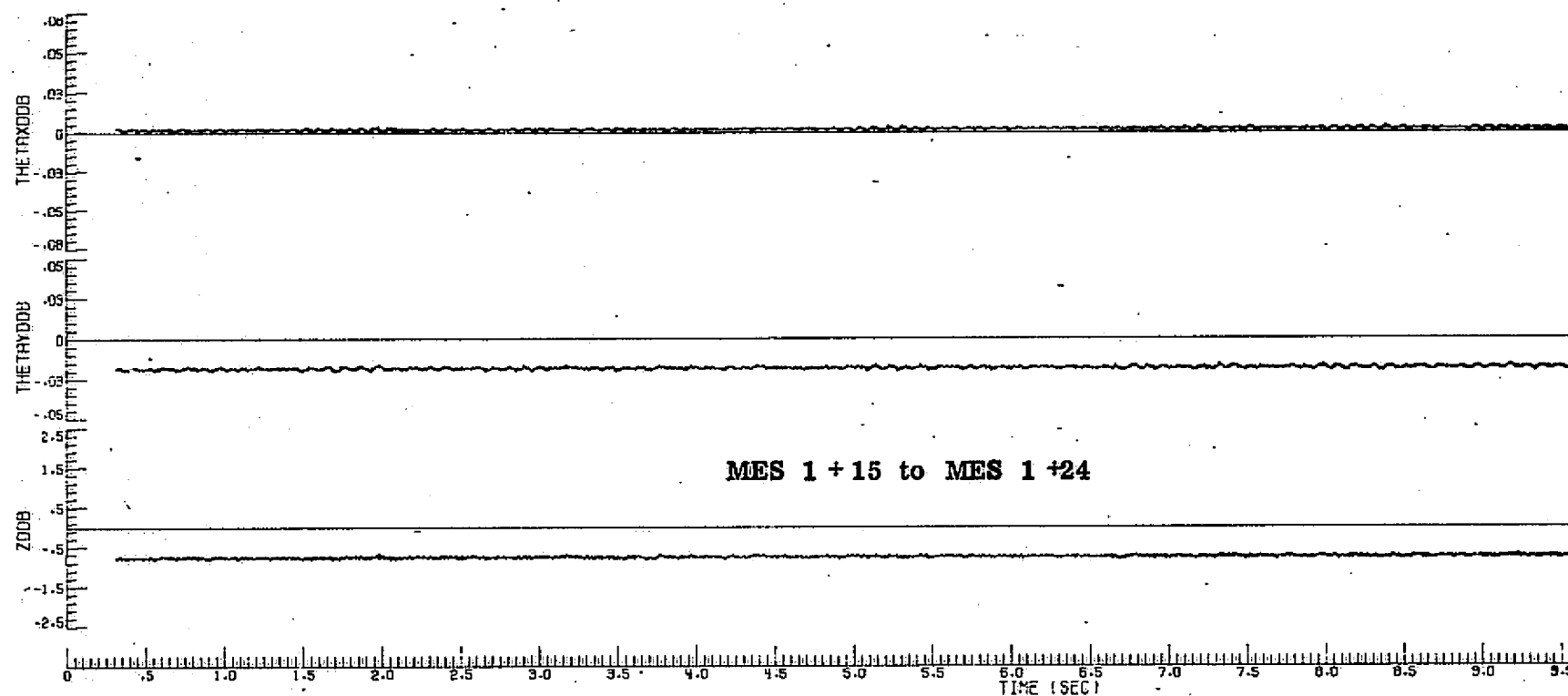
FIGURE 84.

TC-4

Centaur First Burn

-

VLC cg Accelerations - 1024 sps



O = 21:30:20 = 77420 sec.

FIGURE 85. TC-4 Centaur First Burn - Bus Accelerations - 1024 sps

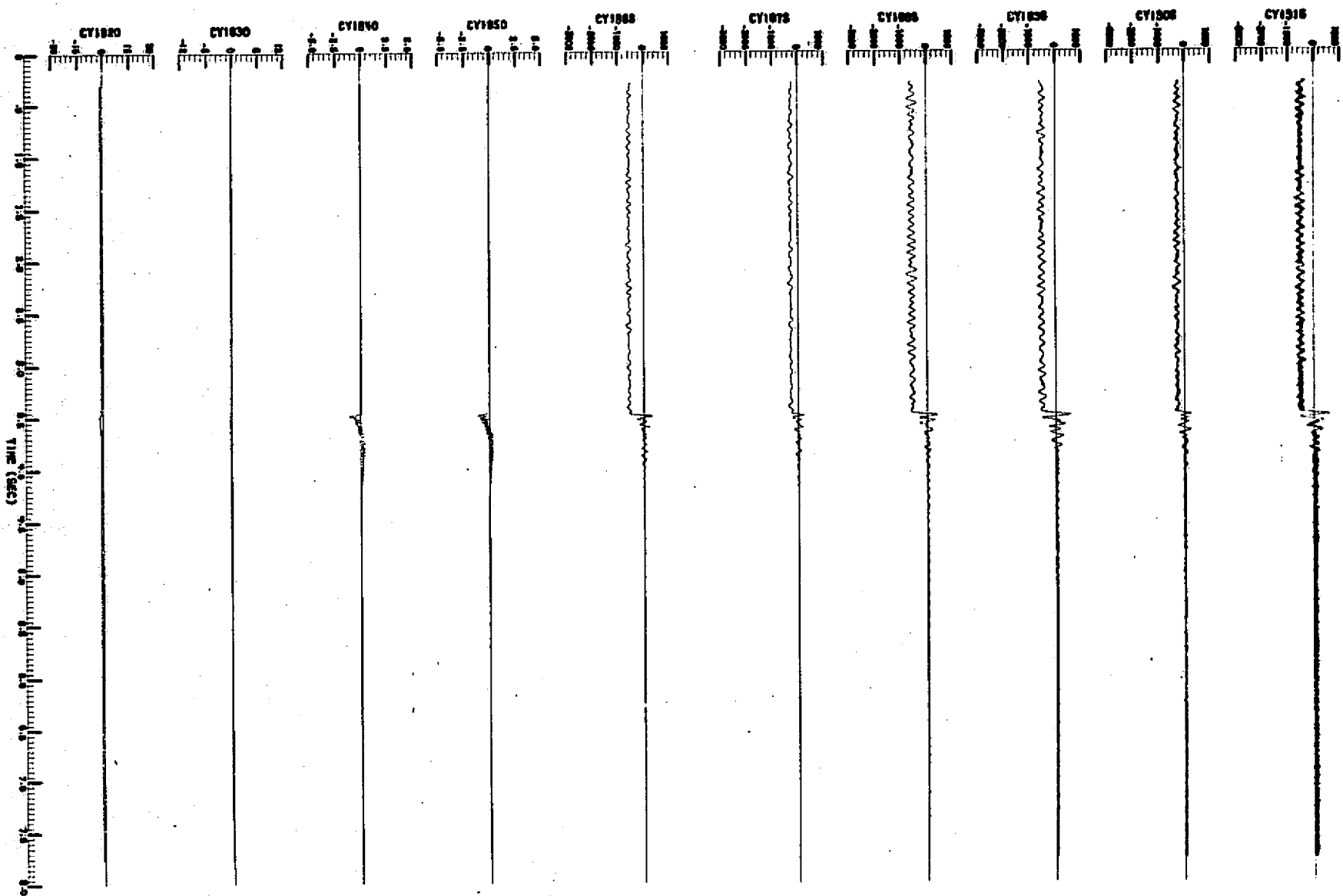


FIGURE 86.

TC-4

MECO 1 - Strains & Vibrations

-

1024 sps

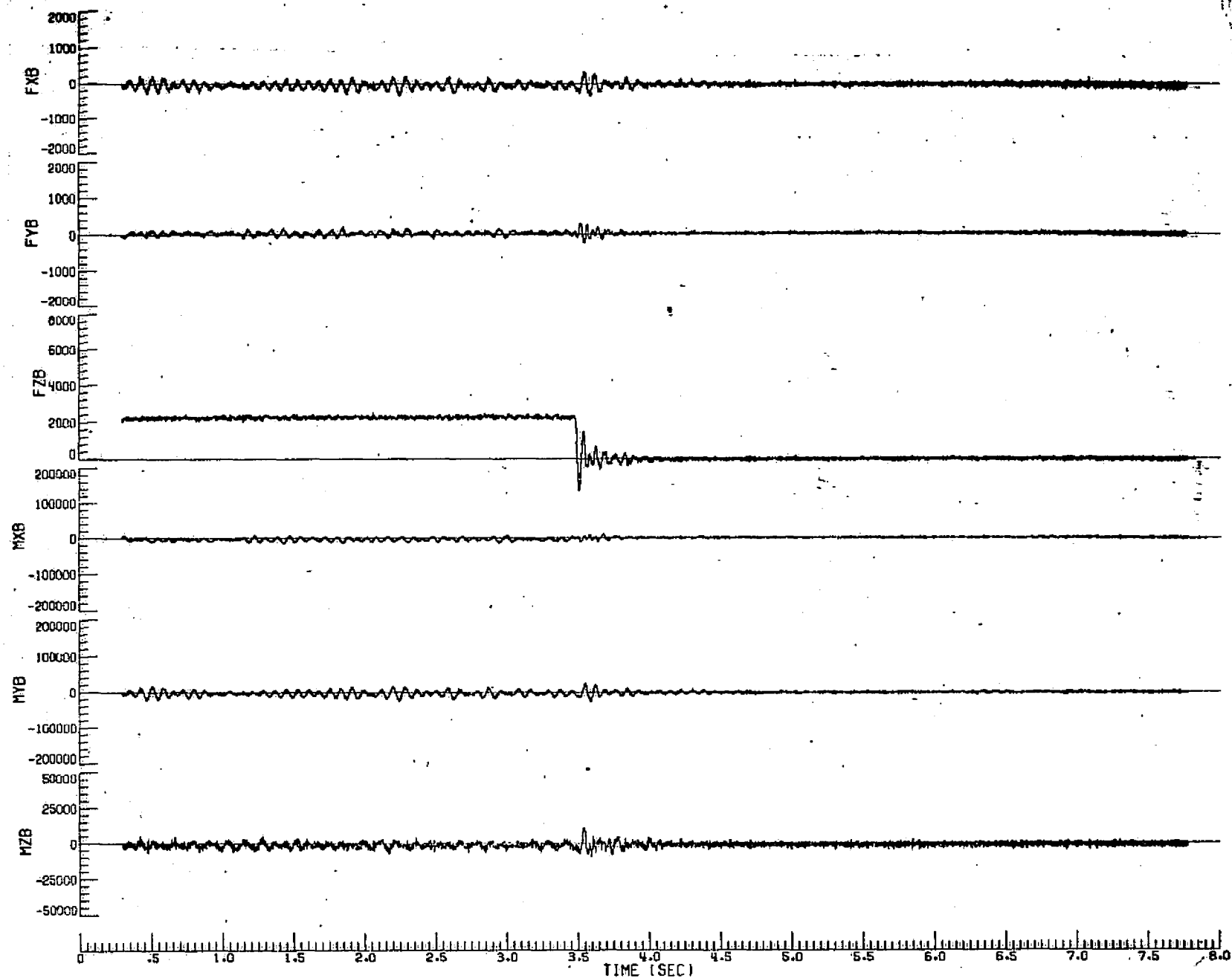


FIGURE 87.

TC-4

MECO 1

-

Forces & Moments

-

O = 21:32:08 = 77528 sec.
1024 sps

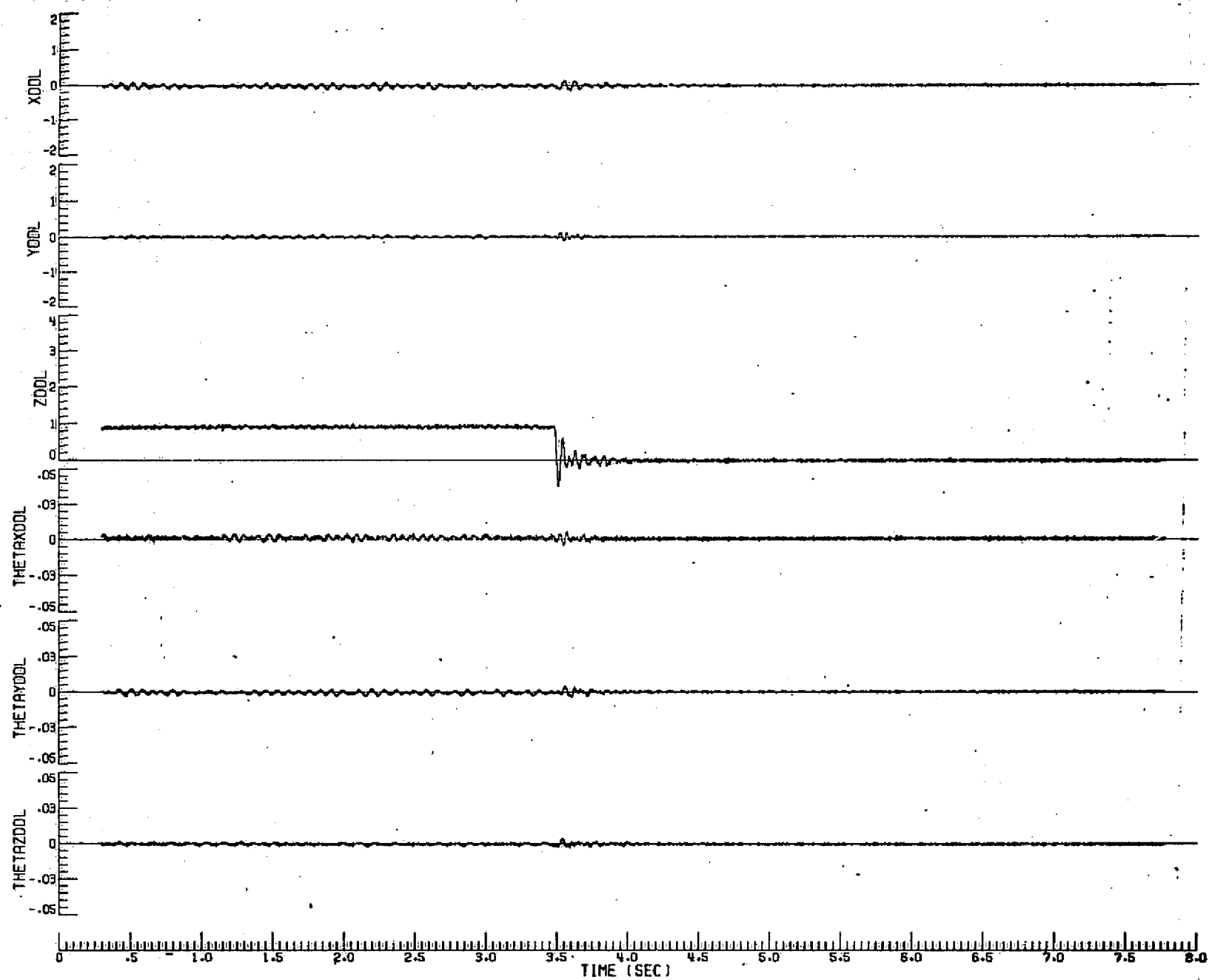


FIGURE 88.

TC-4

MECO I

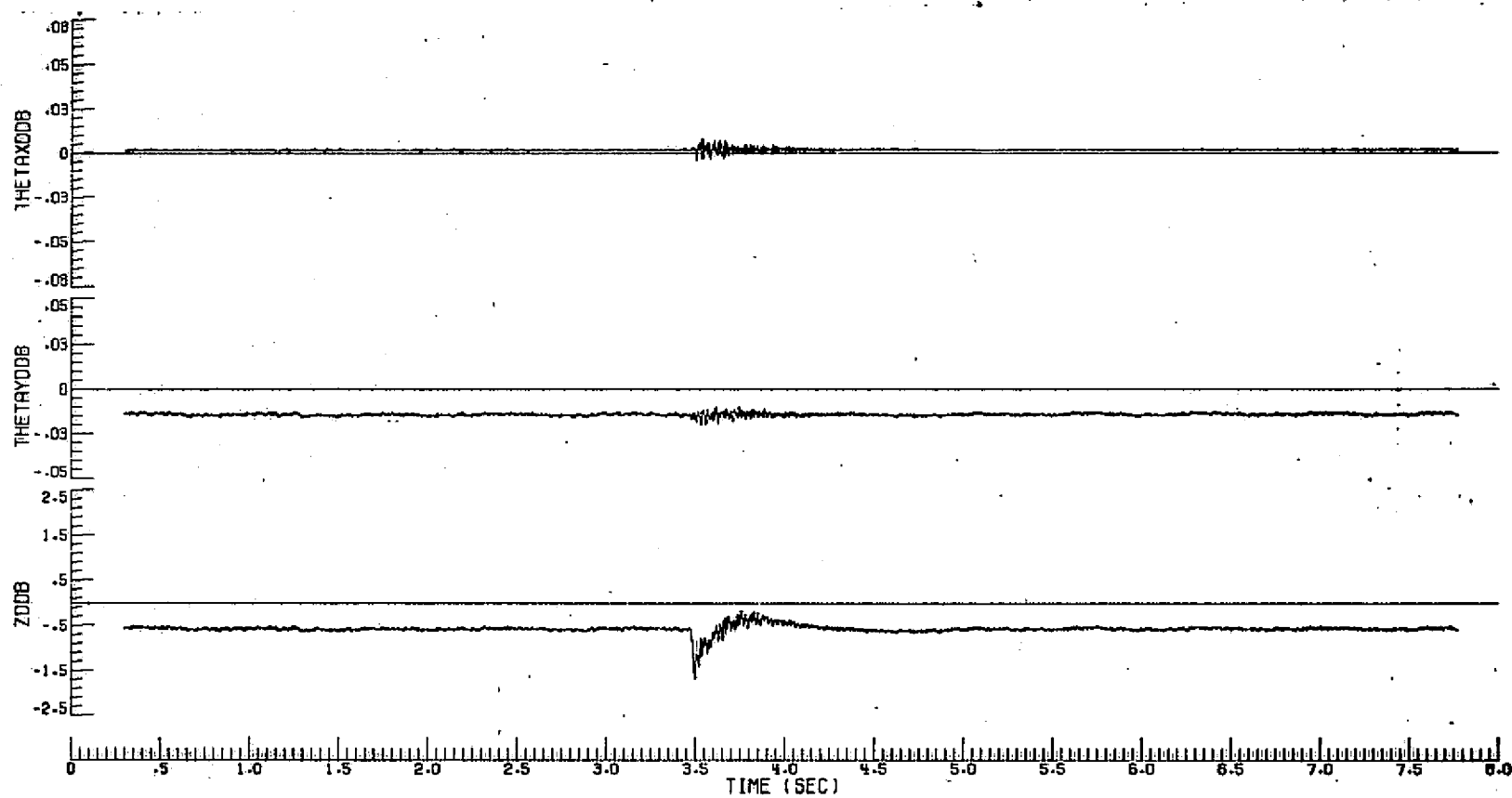
-

VLC cg Accelerations

-

O = 21:32:08 = 77528 sec.

1024 sps



O = 21:32:08 = 77528 sec.

FIGURE 89. TC-4 MECO 1 - Bus Accelerations - 1024 sps

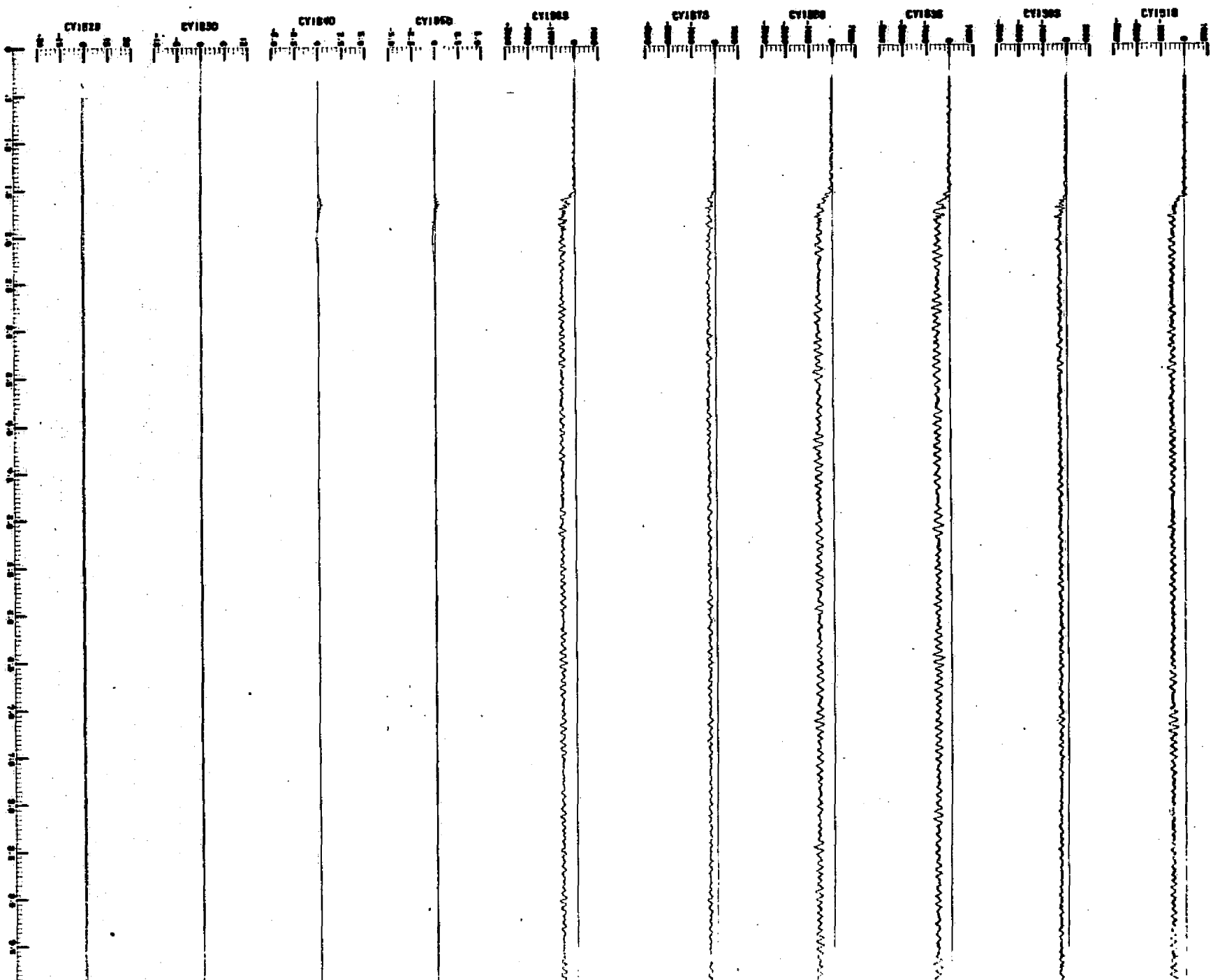


FIGURE 90.

TC-4

MES 2

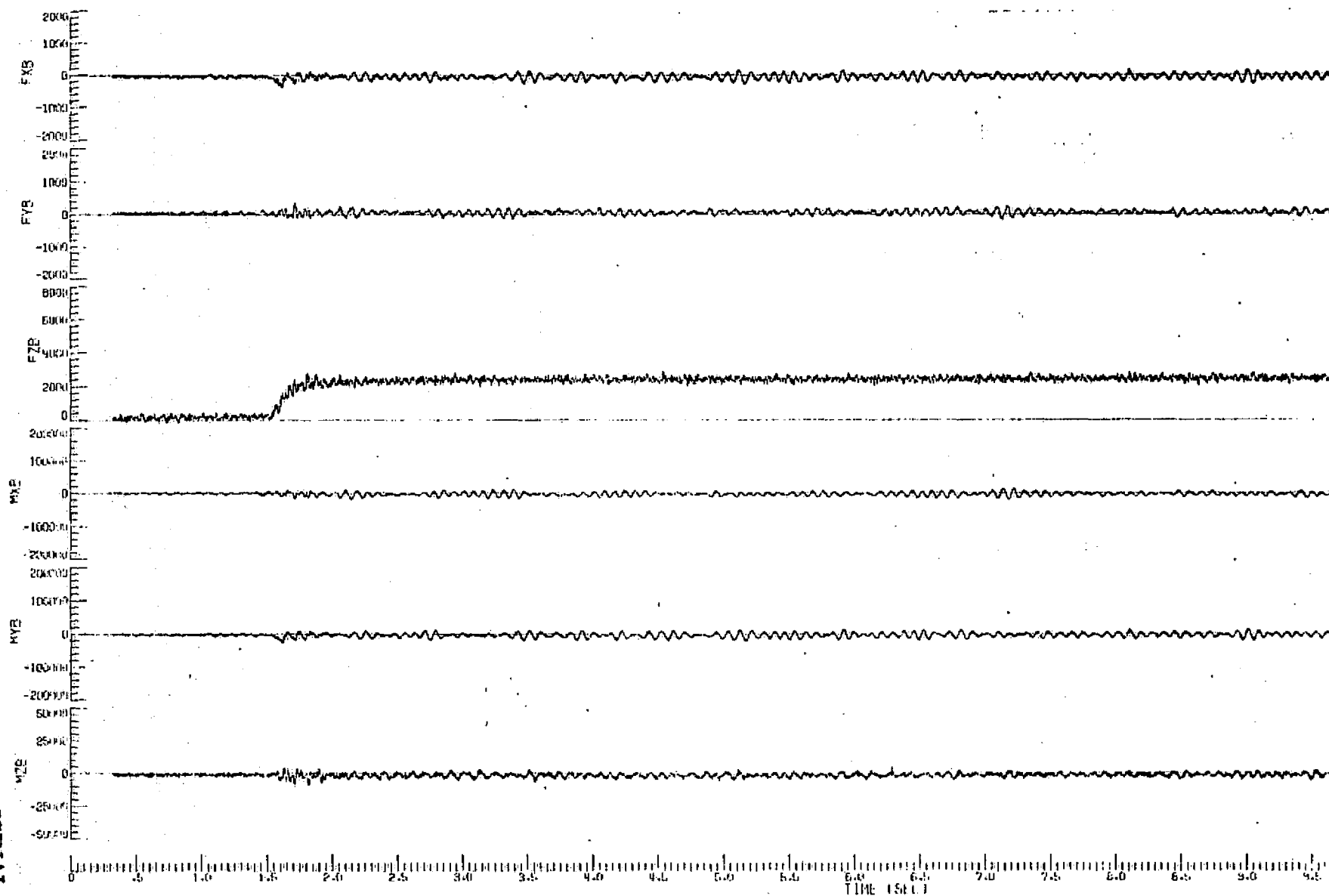
-

Strains & Vibrations

- 1024 sps

O = 21:47:30 = 78450 sec.

ORIGINAL PAGE IS
OF POOR QUALITY



O = 21:47:30 = 78450 sec.

FIGURE 91.

TC-4

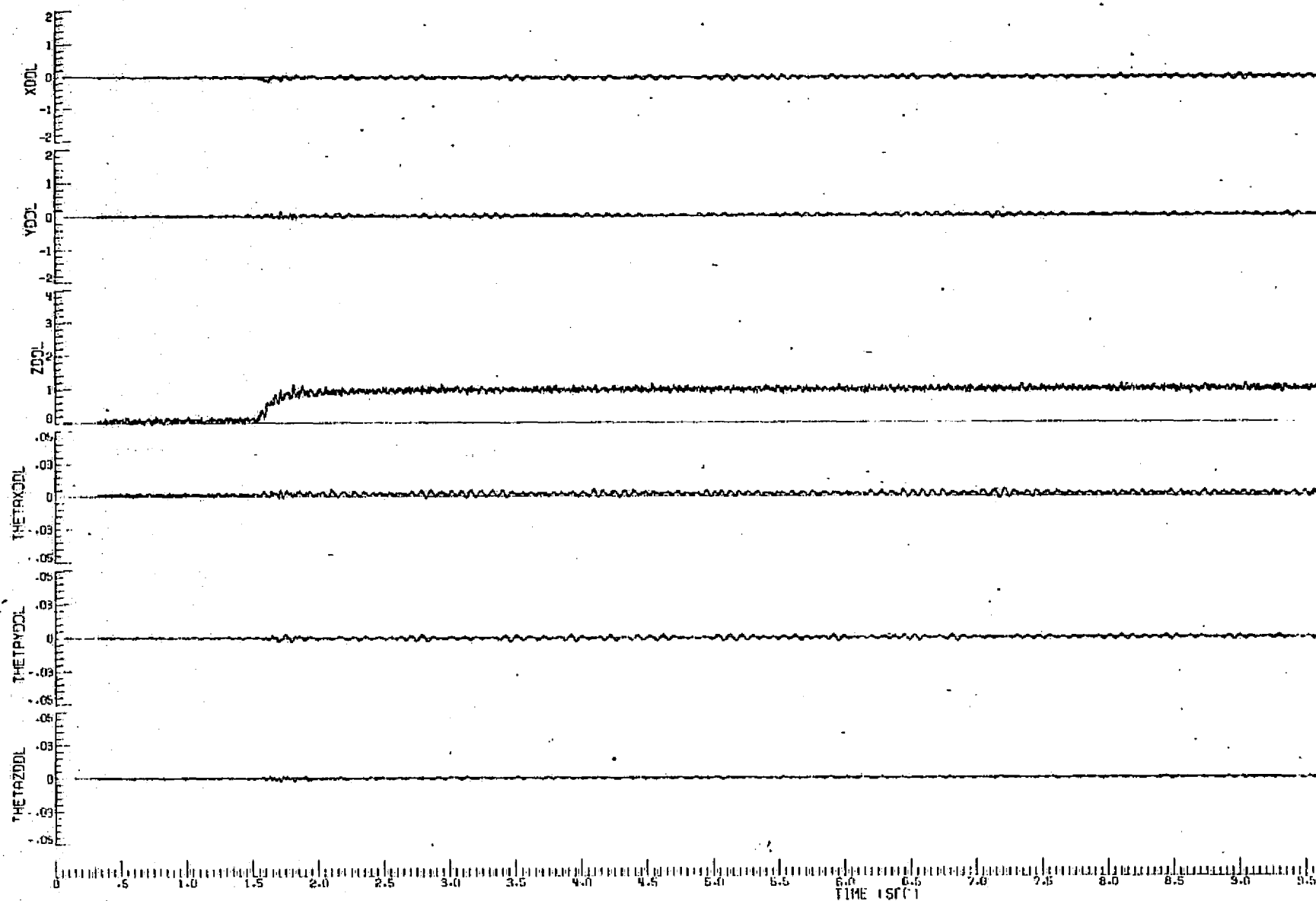
MES 2

-

Forces & Moments

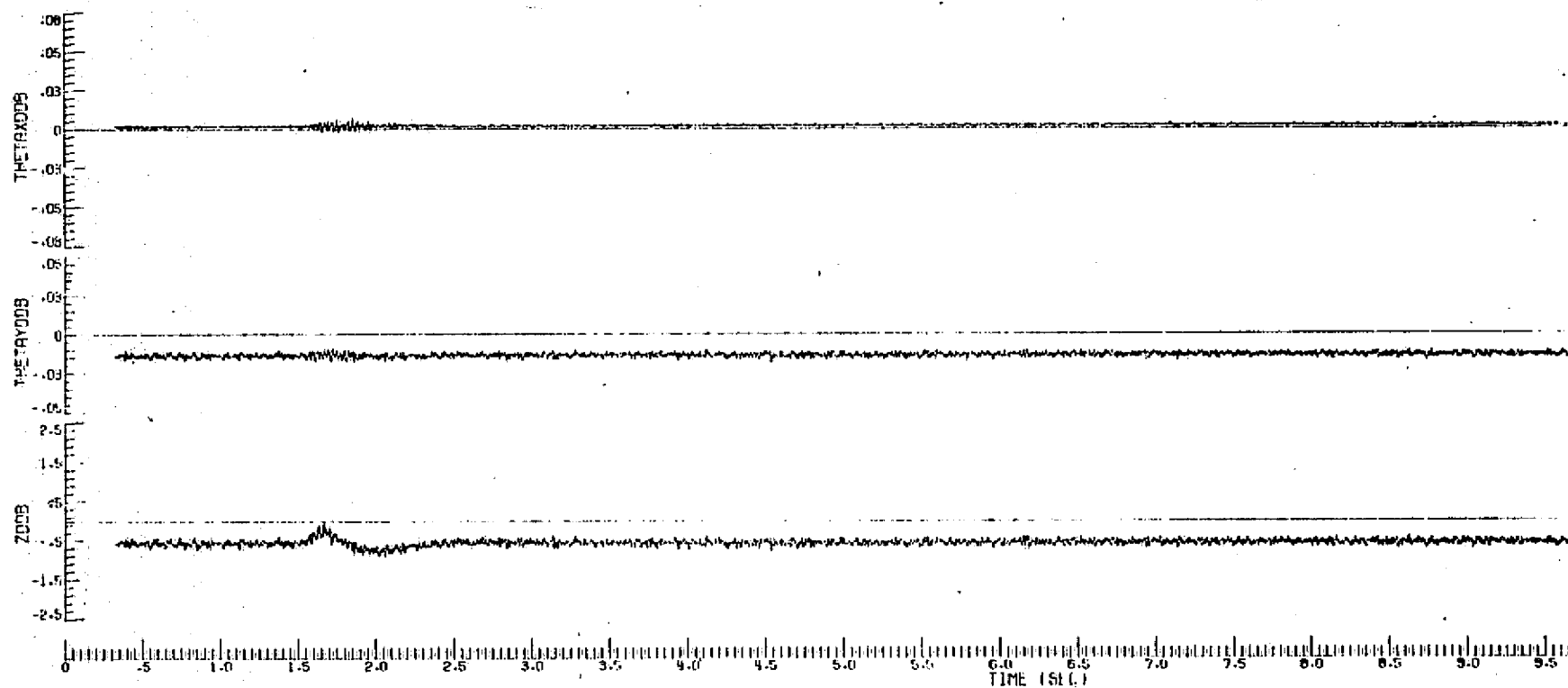
-

1024 sps



O = 21:47:30 = 78450 sec.

FIGURE 92. TC-4 MES 2 - VLC cg Accelerations - 1024 sps



O = 21:4:30 = 78450 sec.

FIGURE 93. TC-4 MES 2 - Bus Accelerations - 1024 sps

FIGURE 94. TC-4 MELO 2, Vibration Sensors - 4096 sps

O = 21:52:46 = 78766 sec.

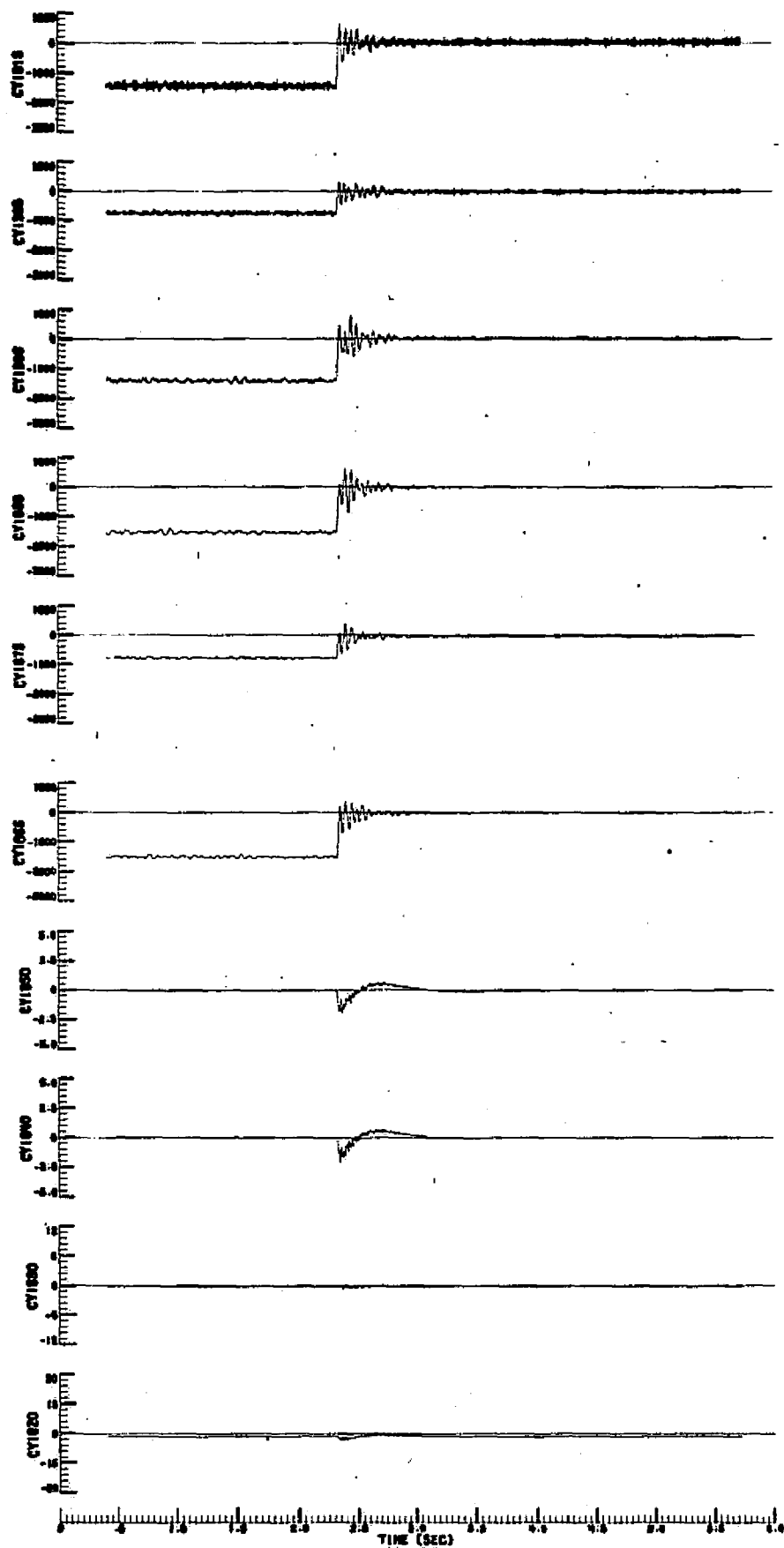
TIME (SEC)

CV1820

CV1830

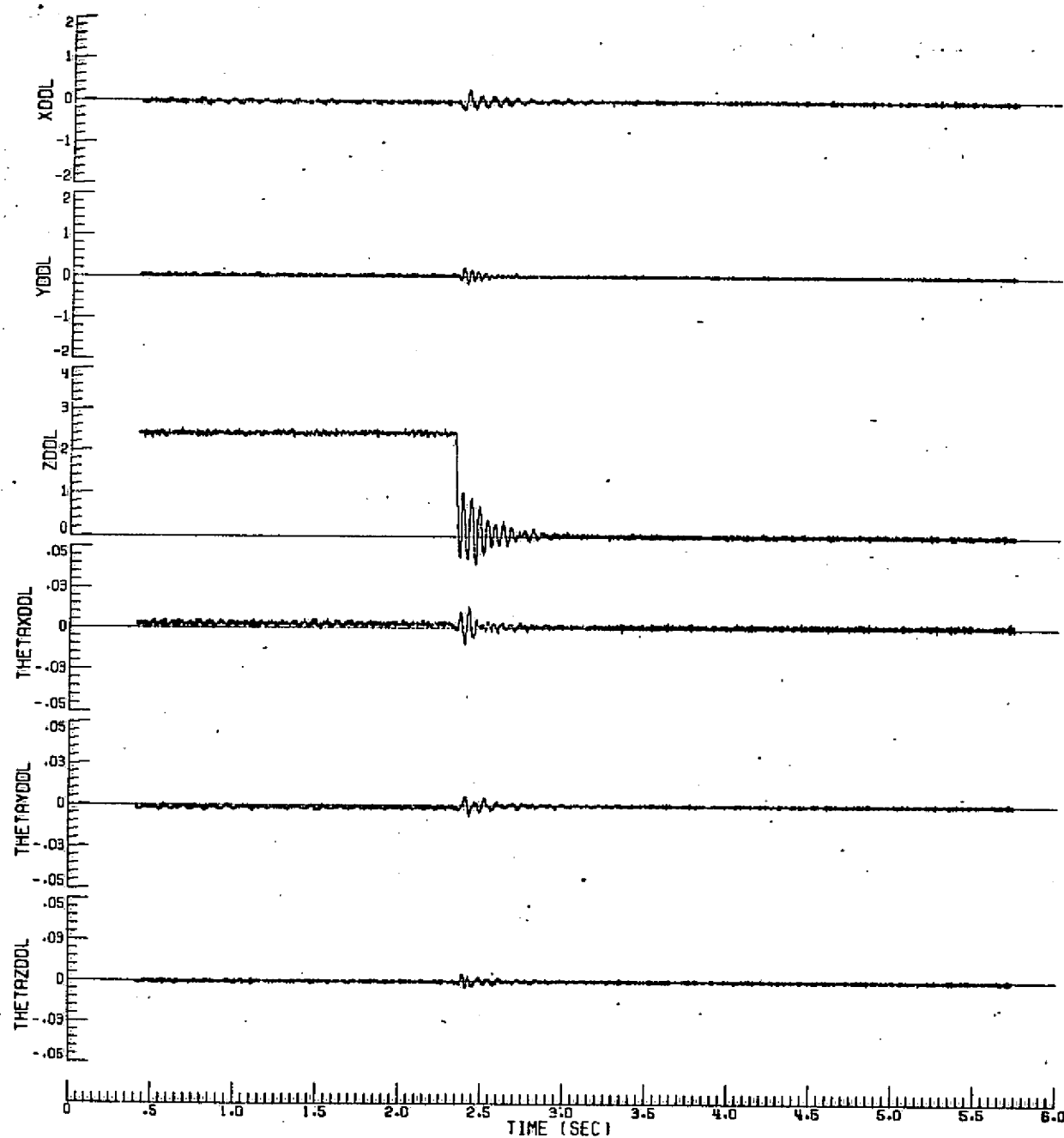
CV1840

CV1850



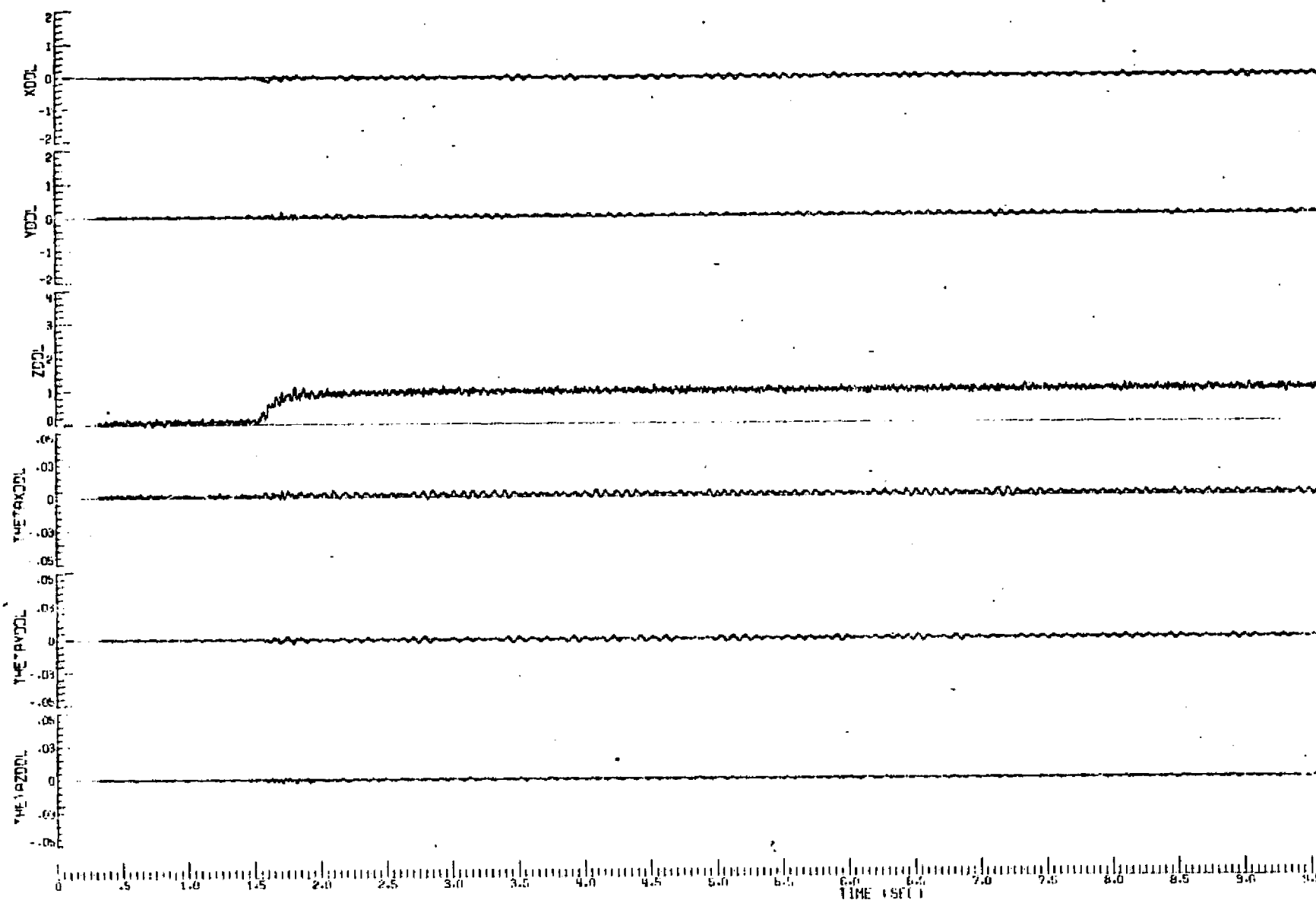
O = 21:52:44 = 78764 sec.

FIGURE 95. TC-4, MECO 2 Strains & Vibration - 1024 sps



O = 21:52:44 = 78764 sec.

FIGURE 96. TC-4, MECO 2, VLC cg Accelerations - 1024 sps



O = 21:47:30 = 78450 sec.

FIGURE 92.

TC-4

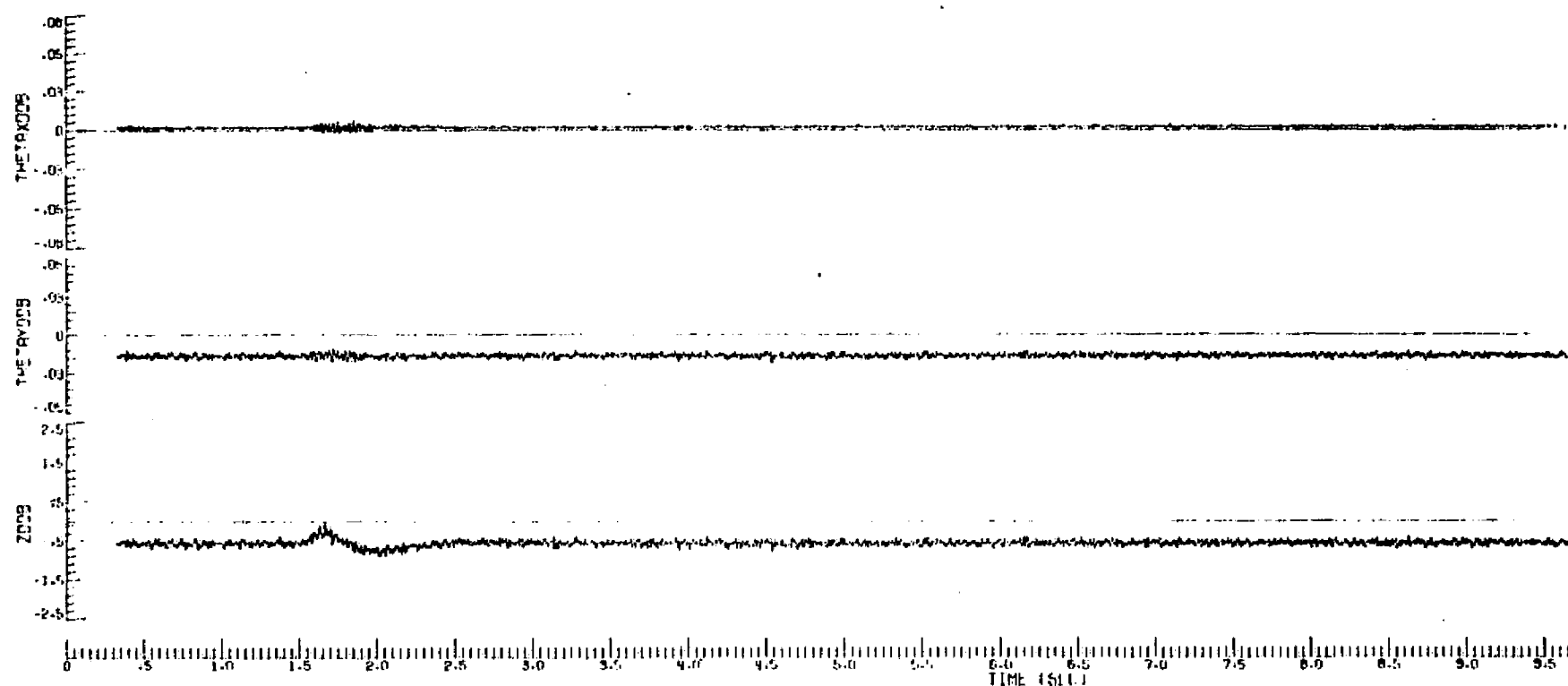
MES 2

-

VLC cg Accelerations

-

1024 sps



O = 21:4 :30 = 78450 sec.

FIGURE 93.

TC-4

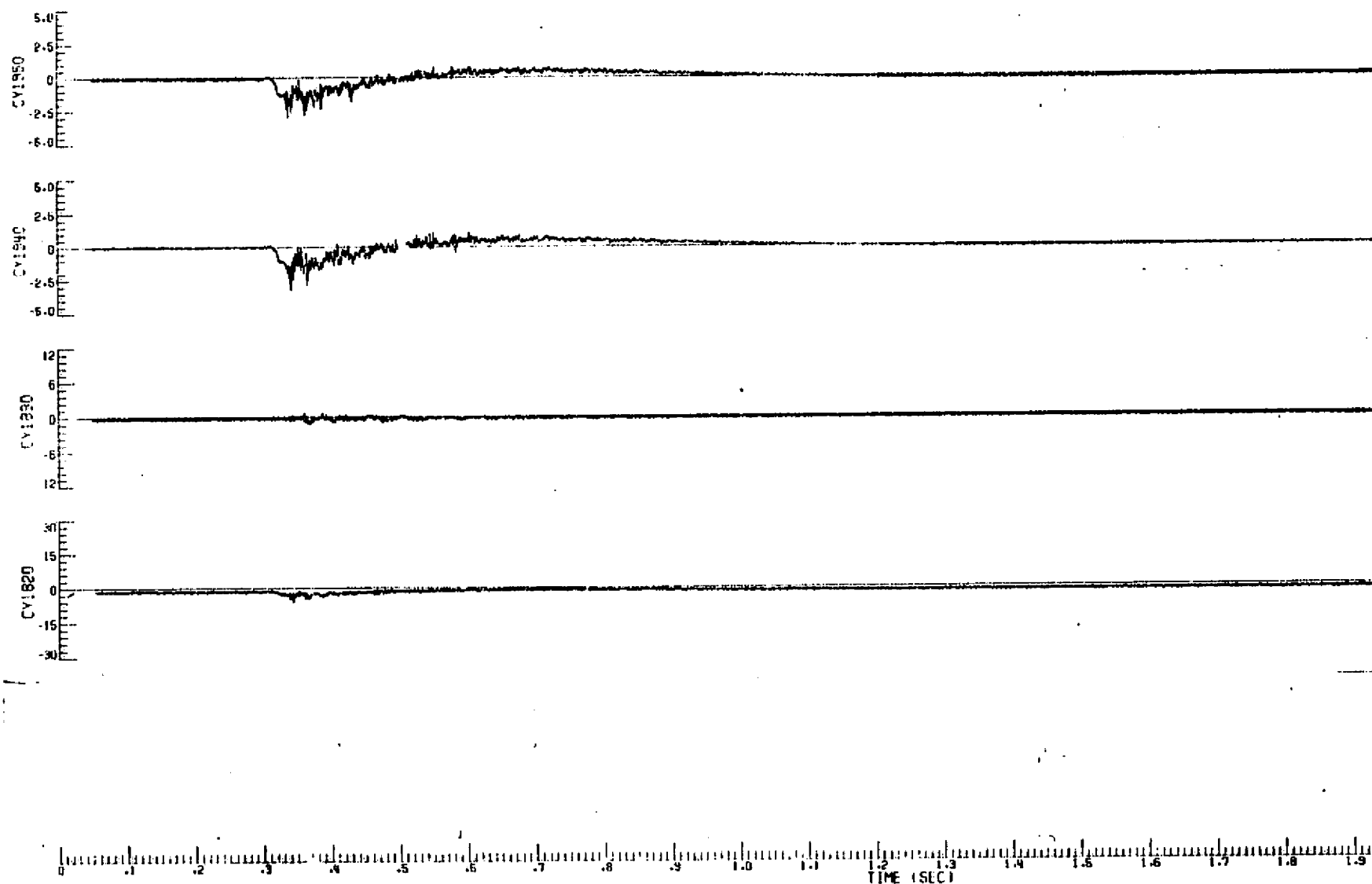
MES 2

-

Bus Accelerations

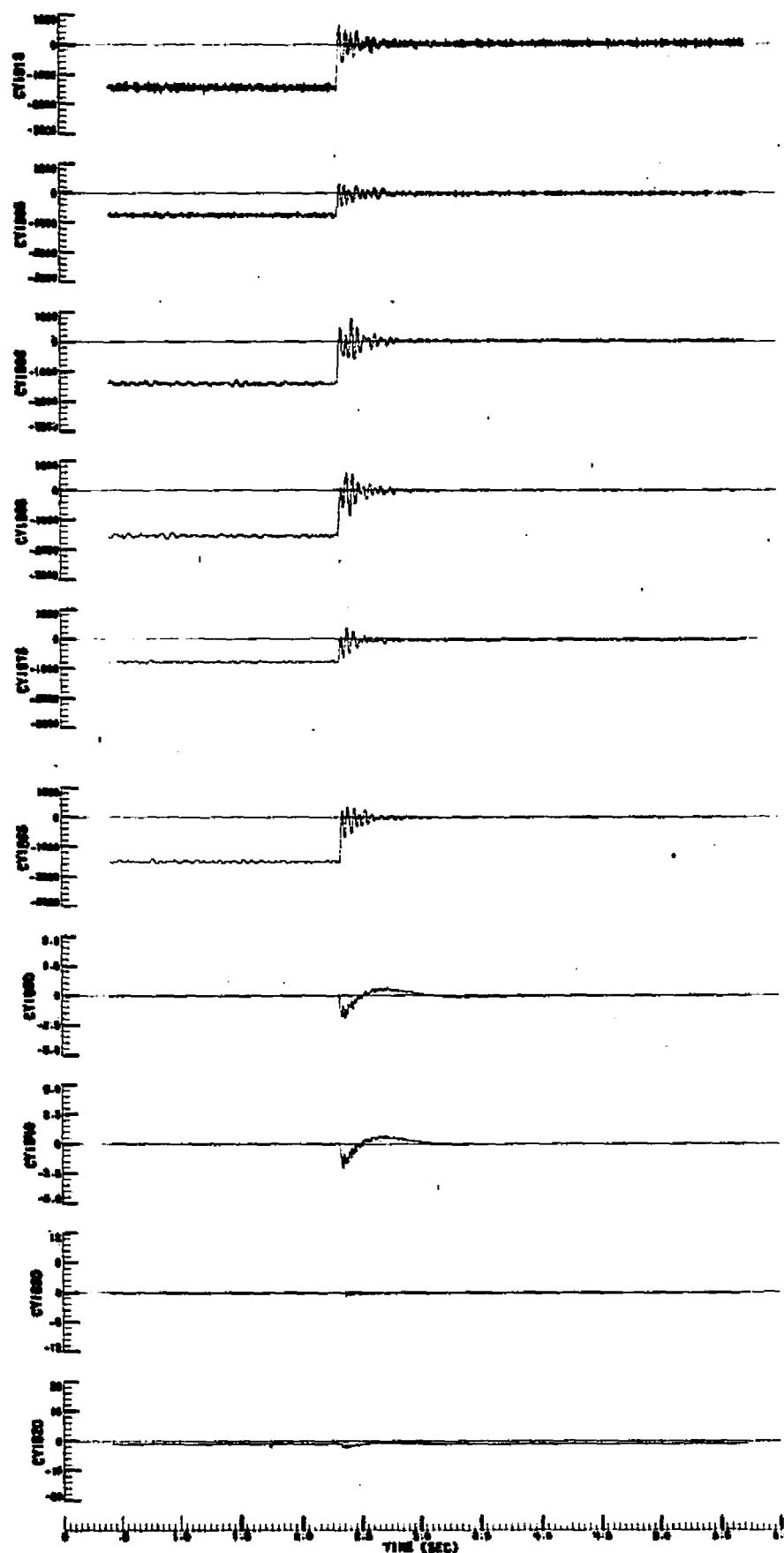
-

1024 sps



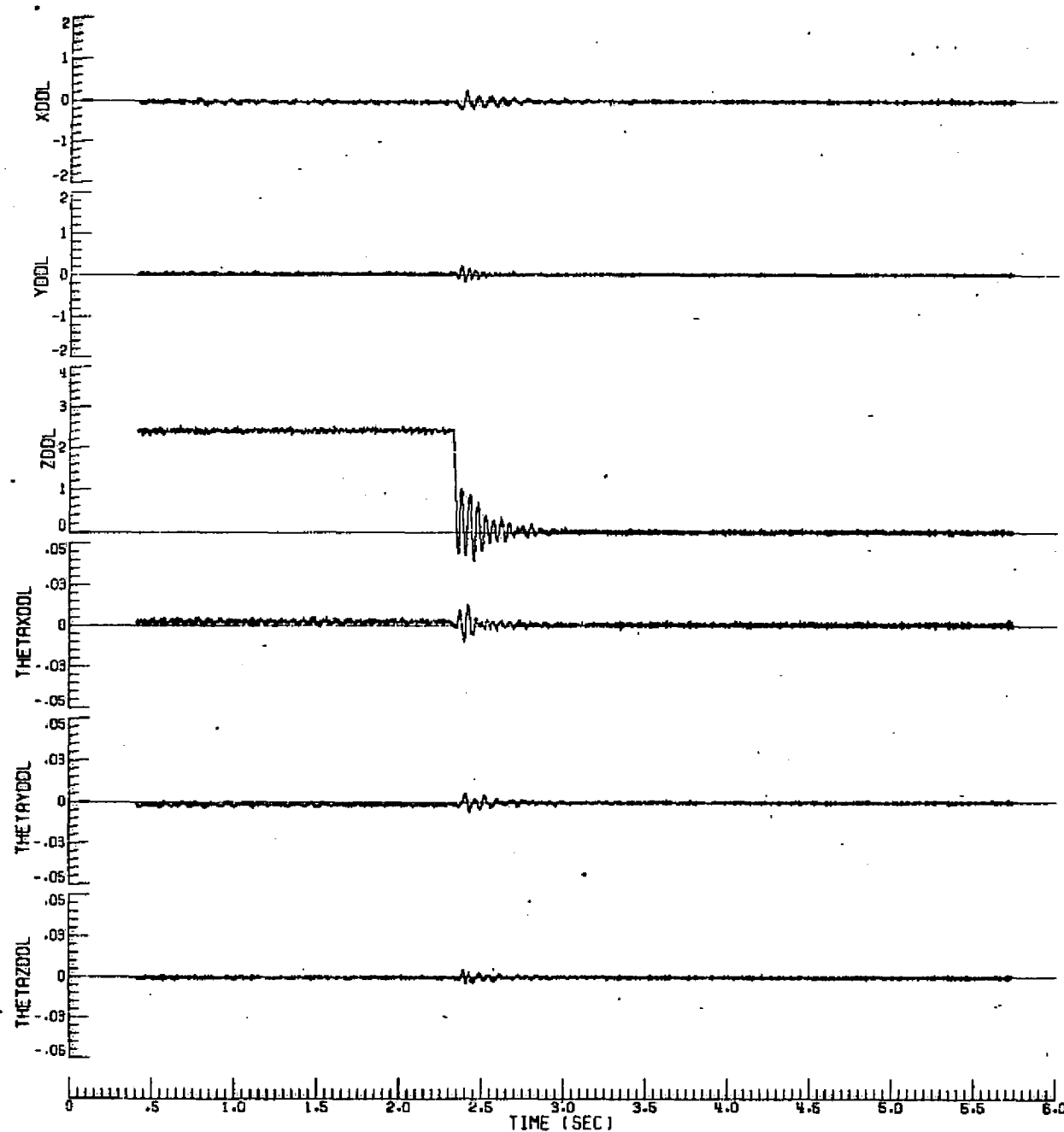
O = 21:52:46 = 78766 sec.

FIGURE 94. TC-4 MELO 2, Vibration Sensors - 4096 sps



O = 21:52:44 = 78764 sec.

FIGURE 95. TC-4, MECO 2 Strains & Vibration - 1024 sps



O = 21:52:44 = 78764 sec.

FIGURE 96. TC-4, MECO 2, VLC cg Accelerations - 1024 sps